

RESOLUTION NO. 94-23

\* \* \* \* \*

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
CITY/COUNTY ASSOCIATION OF GOVERNMENTS OF SAN MATEO COUNTY (C/CAG)  
AUTHORIZING AN AMENDMENT TO THE HAZARDOUS WASTE MANAGEMENT PLAN

\* \* \* \* \*

WHEREAS, on August 22, 1991, the City/County Association of Governments (C/CAG) approved the revised San Mateo County Hazardous Waste Management Plan; and

WHEREAS, in October, 1991, San Mateo County became a signatory to the Hazardous Waste Management Planning Interjurisdictional Agreement (IJA) that regionally allocated hazardous waste management capacity, as developed by the Facility Allocation Committee. The IJA does not allocate hazardous waste management responsibility to San Mateo County since the County currently provides more hazardous waste treatment capacity than the amount of waste it generates.

WHEREAS, in October, 1991, the State Environmental Protection Agency (Cal EPA) - Toxic Substances Control Program (formerly State Department of Health Services) requested a plan amendment relating to the County's waste management responsibility in the event that the ABAG regional planning process dissolves and related interjurisdictional agreements are repealed; and

WHEREAS, on January 16, 1992, amended the San Mateo County Hazardous Waste Management Plan, as requested by the State. This action marked the end of a year long collaborative process between Cal EPA and C/CAG staff to resolve outstanding differences regarding the plan's content; and

WHEREAS, in September, 1992, Cal EPA informed C/CAG that it would not review the San Mateo County plan, and ten other Bay Area county plans, because it was received after a statutory submittal deadline; and

WHEREAS, in September, 1993, AB 1034 extended the statutory submittal deadline to January 15, 1994, to allow Cal EPA to review submitted revised Hazardous Waste Management Plans; and



WHEREAS, in July, 1994, Cal EPA disapproved all submitted Bay Area county plans, including San Mateo County's, citing that the ABAG interjurisdictional agreement "unnecessarily limited the potential siting of needed hazardous waste management facilities"; and

WHEREAS, in September, 1994, ABAG and County staff met with Cal EPA to discuss the basis for disapproval. The meeting revealed that with minimal changes to the interjurisdictional agreement, the State would approve the County plan. Changes would include clarifying that (1) no local agency would prohibit submittal of an application for a hazardous waste management facility, and (2) each agency has a process for considering applications for new hazardous waste management facilities; and

WHEREAS, in October, 1994, the ABAG coordinated Hazardous Waste Management Allocation Committee approved changes to the interjurisdictional agreement, as discussed above; and

WHEREAS, in November, 1995, the San Mateo County Board of Supervisors amended the interjurisdictional agreement, as discussed above to incorporate the changes discussed above; and

WHEREAS, the plan amendment does not constitute a significant change to the project nor create environmental impacts that are not addressed in the certified final EIR; and

NOW, THEREFORE, IT IS HEREBY RESOLVED, that on December 8, 1994, the City/County Association of Governments (C/CAG):

- (1) Finds that the revised plan does not constitute a substantial change to the project which would require major revisions to the final EIR which was previously certified as complete, correct, and adequate and prepared pursuant to CEQA and CEQA Guidelines;
- (2) Approves the amendment to the San Mateo County Hazardous Waste Management Plan shown in Exhibit "A".



## EXHIBIT "A"

### POLICIES

#### 10. Accept Responsibility for Hazardous Waste Management

Accept responsibility for providing hazardous waste management capacity to the extent required by the definition of "fair share" in the Memorandum of Understanding between San Mateo County and the Association of Bay Area Governments (February, 1990) which establishes the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee (a.k.a. Facility Allocation Committee).

If additional waste management capacity is required, it shall be provided in accordance with the Capacity Allocation Plan approved by the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee and the Hazardous Waste Management Planning Interjurisdictional Agreement (IJA) Between Member Counties of the San Francisco Regional Hazardous Waste Management Capacity Allocation Committee (October, 1994), or any subsequent interjurisdictional agreement based on the Capacity Allocation Plan. The Capacity Allocation Plan and IJA are policy documents which allocate hazardous waste management capacity responsibility among the Bay Area counties.

If the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee is ever dissolved, its process terminated, and resultant inter-jurisdictional agreements repealed, San Mateo County will reassess its responsibility for providing hazardous waste management capacity.

The capacity limitations of this policy do not apply to hazardous waste transfer and storage facilities.

This policy does not prevent any jurisdiction from approving an application for any type of hazardous waste management facility accepting any type of hazardous waste.

# THE HISTORY OF THE UNITED STATES

The history of the United States is a story of a people who have grown from a small colony of English settlers to a great nation of free men and women. It is a story of the struggles and triumphs of a people who have fought for the principles of liberty and justice for all.

The story begins with the first English settlers who came to the New World in 1607. They were seeking a new home where they could live in peace and prosperity. They found a land of great beauty and abundance, but they also found a land of great danger. The Native Americans were their enemies, and the English settlers were often at war with them.

Over the years, the English settlers grew in number and in power. They built a great empire that stretched across the continent. They fought many wars with the Native Americans, and they won. They became a great nation, and they were respected by all.

The story of the United States is a story of a people who have grown from a small colony to a great nation. It is a story of the struggles and triumphs of a people who have fought for the principles of liberty and justice for all.

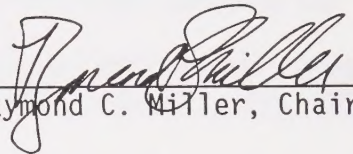
The story of the United States is a story of a people who have grown from a small colony to a great nation. It is a story of the struggles and triumphs of a people who have fought for the principles of liberty and justice for all.

PASSED, APPROVED, AND ADOPTED THIS 8TH DAY OF DECEMBER, 1994.

AYES: 17

NOES: 0

ABSENT: 4

  
\_\_\_\_\_  
Raymond C. Miller, Chair

RCM/GDB:cdn - GDBE1908.ACS





# San Mateo County Hazardous Waste Management Plan

**FINAL**

January 1992

*Approved by the  
Hazardous Waste Management Plan  
Advisory Committee • June 1991*

*Approved by the  
City/County Association of Governments  
of San Mateo County (C/CAG) • January 1992*

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# San Mateo County

## Healthcare Waste

### Management Plan

San Mateo County Health Department  
1000 S. Elgin Avenue  
Redwood City, CA 94063  
415.354.2000

January 1992

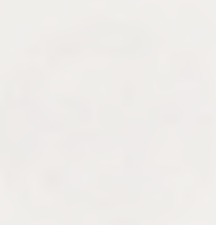
Prepared by:  
Health Department

Page 1 of 1

Revised: 1/92

This document is the property of San Mateo County Health Department. It is to be used for the purpose of the project for which it was prepared. It is not to be distributed outside the project without the written permission of the Health Department.

San Mateo County Health Department  
1000 S. Elgin Avenue  
Redwood City, CA 94063  
415.354.2000



San Mateo County - California

# **San Mateo County Hazardous Waste Management Plan**

*January 1992*

*Approved by the  
Hazardous Waste Management Plan  
Advisory Committee • June 1991*

*Approved by  
City/County Association of Governments  
of San Mateo County (C/CAG) • January 1992*

***Prepared by:***

San Mateo County Department of  
Environmental Management, Planning Division

San Mateo County Department of Health,  
Environmental Health Section



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## Introduction and Summary



## INTRODUCTION AND SUMMARY

### INTRODUCTION

The high quality of life and economic prosperity that is characteristic of California is dependent, in part, upon the production and use of manufactured goods. One consequence of the production and use of such goods is the generation of hazardous waste. Hazardous waste ranges from familiar substances, such as waste oil and solvents, to more specialized compounds, such as PCB's and dioxin. California's present system for managing hazardous waste relies heavily on land disposal of untreated hazardous waste. This approach has proven an unacceptable method of hazardous waste management, and will be prohibited in California by 1990. As an alternative to land disposal, treatment technologies exist whereby hazardous waste can be recycled or rendered less hazardous in carefully controlled industrial-type facilities which pose no greater risks than many existing manufacturing processes.

An effective strategy for managing hazardous waste should encompass a hierarchy of approaches. The preferred form of hazardous waste management is waste reduction. This involves either reducing the amount of waste being produced or recycling it back into the manufacturing process. Once hazardous waste is produced and cannot be recycled or reused, treatment then becomes the next preferred form of hazardous waste management. There are three general means of treating hazardous waste: physical treatment, chemical treatment and biological treatment. Each of these methods can significantly reduce hazardous waste volumes, although a small amount of remaining waste does result in each case. Such wastes, called "residuals," are then contained in a specifically engineered facility known as a "residual repository."

Throughout the State, siting hazardous waste management facilities has become a constraint to effective hazardous waste management. This is primarily due to vigorous public opposition and the ability of local government to reject needed facilities for reasons other than technical safety. In response, the State legislature in 1986 enacted AB 2948, known as the Tanner Bill. This legislation is the culmination of a lengthy study by the California Hazardous Waste Management Council which concluded that hazardous waste management is a responsibility which must be shared by all communities, and that (1) a comprehensive planning effort must be undertaken at the local level to identify the need for the location of feasible sites for hazardous waste facilities, and (2) the State should be granted limited power to approve projects rejected at the local level. The Tanner Bill assures these ends by establishing both a planning process for counties to prepare comprehensive local hazardous waste management plans, and a limited appeals process for local decisions on hazardous waste management facilities. The local plan will ultimately be incorporated into a Statewide hazardous waste management system. The facilities provided for by this plan would involve carefully controlled industrial operations that pose no greater risks to a community than many of the manufacturing processes currently found in industrial zones throughout the County.

In March 1987, the San Mateo County Board of Supervisors authorized the preparation of a Countywide Hazardous Waste Management Plan in accordance with the Tanner legislation. The plan will serve as the principal planning document guiding hazardous waste management decisions in San Mateo County and its 20 cities. A ten member advisory committee comprised of representatives from the Board of Supervisors, the cities in the County, industry, small business,

environmental organizations and the general public, assisted with the step-by-step development and review of the plan.

The San Mateo County Hazardous Waste Management Plan was formulated in accordance with the administrative guidelines issued by the State Department of Health Services. Among the purposes of the plan are to: (1) analyze the hazardous waste stream within San Mateo County, (2) determine the need for hazardous waste management facilities within the County, (3) identify areas in the County suitable for siting hazardous waste facilities, (4) evaluate the potential for waste reduction, and (5) discuss the opportunities to better manage hazardous waste generated by small businesses and households. The need for new facilities is based upon local waste generation; however, the plan does allow local jurisdictions to approve a facility to meet regional or statewide needs as well.

The planning process has provided extensive opportunity for public participation. As of January 1989, 17 public hearings were held by the advisory committee and Board of Supervisors. Each hearing was advertised in a newspaper of Countywide circulation, and meeting notices were sent to approximately 400 citizens and organizations, including public officials, neighborhood organizations, industry representatives, and environmental groups. To facilitate increased public participation, a public involvement consultant was retained who facilitated three community workshops, developed two informational newsletters, and prepared a radio public service announcement. These public participation efforts will continue during the plan's development and review process.

Between February and April 1989, the draft plan was presented to each city council in the County. The cities were afforded opportunity to submit written comments on the plan. In June 1989, the Board of Supervisors reauthorized the draft plan for final consideration by the cities.

Between June and September 1989, the San Mateo County Board of Supervisors and the city councils of 17 cities in San Mateo County approved the plan. Also during this period, an environmental impact report was certified by the jurisdictions as complete and in accordance with the California Environmental Quality Act (CEQA). A summary of the EIR is included in the Appendix.

In February 1990, the State Department of Health Services disapproved the plan, citing unworkable "fair share" requirements and unjustified and overly restrictive siting criteria. In September 1990, the State legislature adopted AB 2595 which allows counties with disapproved plans to resubmit a revised plan after consultation with the Department of Health Services. Between January and June 1991, San Mateo County staff actively met with State Department of Health Services staff to discuss plan revisions necessary for final approval.

In June 1991, a revised draft plan was approved by the San Mateo County Hazardous Waste Management Plan Advisory Committee, and transmitted to the City/County Association of Governments (C/CAG) for final approval.

## SUMMARY

### Existing Waste Generation

Current data collection efforts indicate that in 1986, San Mateo County generated 35,490 tons of hazardous waste for transport to designated treat-

ment, storage or disposal facilities. Most of this was waste oil and solvents. Approximately 17-19% of the waste stream was treated and disposed of in San Mateo County, and 81-83% was exported to management facilities elsewhere in California or other states. In addition, approximately 58,960 tons of hazardous waste generated outside San Mateo County was imported into the County for management at one of the three permitted hazardous waste management facilities existing at that time.

A less certain component of the San Mateo County waste stream are wastes generated by small quantity generators (small businesses and households generating less than 12 tons per year). These wastes become of key concern when disposed of improperly, e.g., in a municipal landfill or sewer. Calculated estimates indicate that in 1986, 12,345 tons of hazardous waste were generated by small businesses, and 6,345 tons of hazardous waste were generated by households. A similarly uncertain component of the County's hazardous waste stream are those wastes which are generated and managed on-site, i.e., at the firm in which they were generated. In 1986, 125,138 tons are known to have been treated on-site. Figure 1.1 provides a basic illustration of the hazardous waste stream in San Mateo County, based on the most accurate data available.

#### Existing Management Capacity

Although three permitted commercial facilities in the County accepted waste from off-site generators in 1986, only one remains in operation today--Romic Chemical Corporation--a chemical recycler located in East Palo Alto. Romic maintains a current operating capacity of 58,800 tons.

#### Existing Need for New Facilities

Determination of the County's current need for new treatment capacity is based on a regional (ABAG) "fair share" formula that involves a comparative examination of: (1) the capacity required to treat wastes currently being generated in the County, and (2) the capacity currently available from existing treatment facilities in the County. While generating 35,490 tons of hazardous waste and at the same time providing 58,800 tons of treatment capacity, San Mateo County is meeting its current "fair share" responsibility for hazardous waste management capacity in the region.

#### Projected Waste Generation

In the year 2000, San Mateo County is projected to generate approximately 55,025 tons of hazardous waste, of which 83% will be from commercial and industrial sources, 13% from household sources, and 4% from clean-up activities. Waste reduction activities, i.e., source reduction and on-site recycling, could potentially reduce the commercial/industrial waste generation by 10-40%.

#### Projected Management Capacity and Need for New Facilities

Romic Chemical Corporation has planned to expand its operating capacity to 95,480 tons by the year 2000. In addition, Quicksilver Products, Inc., an existing mercury recycler in Brisbane (with permits pending) will maintain an operating capacity of one ton. Projecting the County's future need for new treatment capacity involved comparing projected waste generation (55,025 tons) by the year 2000 with the treatment capacity that Romic and Quicksilver

# Summary of San Mateo County Hazardous Waste Stream (1986)

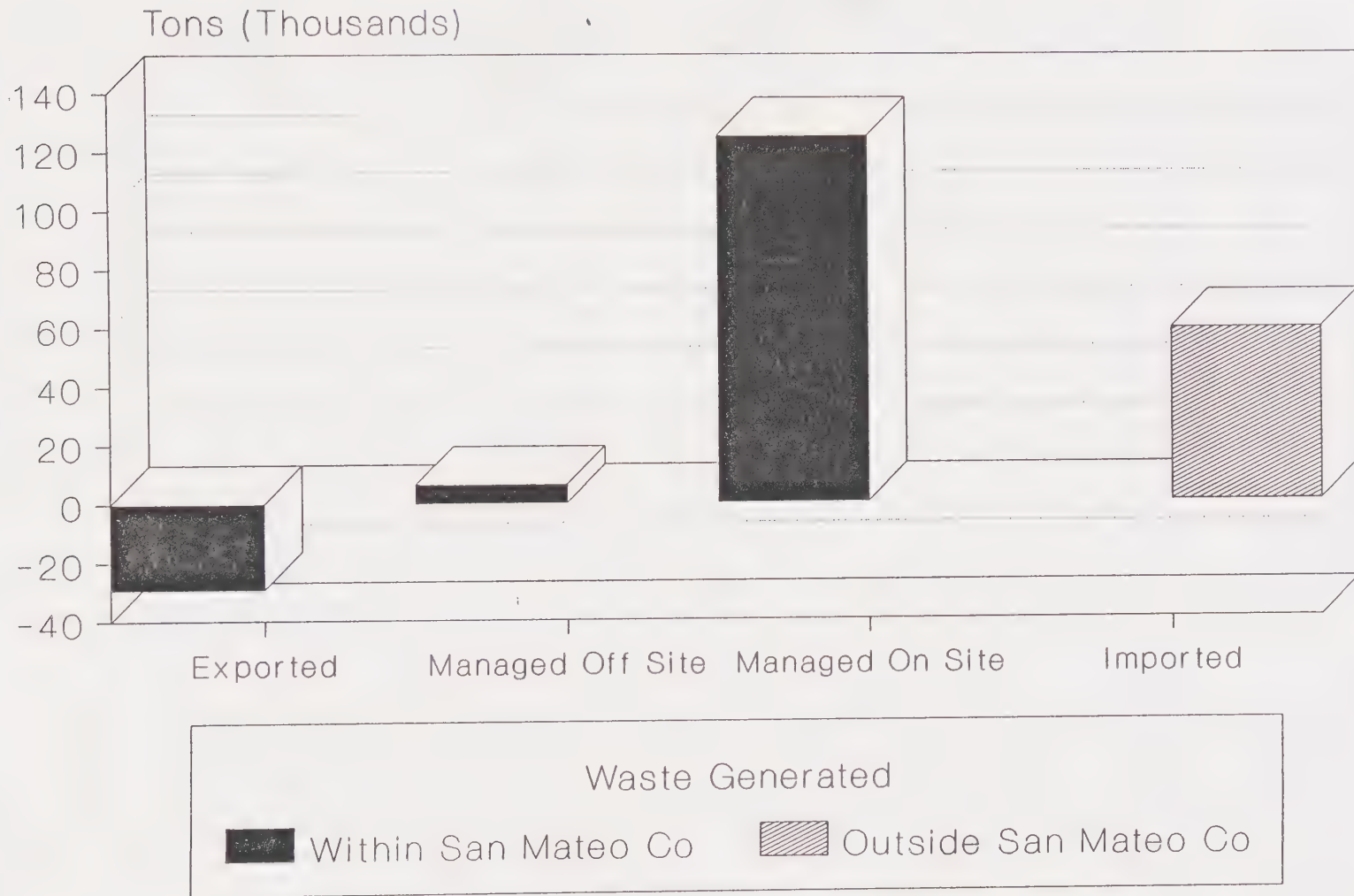


FIGURE 1-1

will be providing (95,481 tons). If waste projections are realized and the anticipated facility improvements are made, San Mateo County would be meeting its future "fair share" responsibility for hazardous waste management capacity in the region. Actual determination will be based on the most current data available and agreements reached in the Bay Area regional capacity allocation process, in which San Mateo County participates.

The plan does not prohibit the County or a city from approving new treatment facilities to meet regional or statewide needs. In fact, the plan encourages the location of new facilities within the County by (1) providing siting criteria and a generalized siting map to determine suitable areas for hazardous waste management facilities, and (2) requiring that the siting criteria be incorporated into local regulations.

An application has recently been submitted to the State Department of Health Services by Redwood City Services Corporation to develop an oil recovery facility in Redwood City. The proposed facility is intended to separate certain hydrocarbons, water, and solids from contaminated petroleum products, and would have a design capacity of 90,000 tons/year.

### Siting Facilities

The plan provides a comprehensive guide for the siting of hazardous waste management facilities in San Mateo County. This includes siting criteria and a map identifying general areas that initially appear suitable for locating new facilities. The criteria and map are intended for use by facility developers when seeking suitable sites in San Mateo County.

Although the plan will be used as an initial basis for determining the suitability of an area, site specific risk assessments will also be required prior to facility approval. A risk assessment involves a comprehensive evaluation of the short and long-term risks associated with the development of a new facility at a specific location in a community. If the risk assessment process reveals that potential risks cannot be adequately mitigated, a proposed site may be disapproved, even though it may be located within a general area that has been designated as potentially suitable for the siting of facilities.

In general, the siting criteria direct facility development away from areas with significant natural hazard potential, environmental resources or population concentrations, and toward industrial areas near transportation corridors and hazardous waste generating sources. Relative suitability is expressed on the Facility Siting Map according to a high/low ranking system. The County's siting criteria will allow for a full range of hazardous waste management facilities. Generally, (1) all treatment facilities, including incinerators, are considered suitable in industrial zones on the Bayside which are either vacant or predominantly developed with hazardous waste generators, and are most distant from residential zones; while (2) all treatment facilities, excluding incinerators, are considered suitable in many of the remaining industrial areas of the Bayside; and (3) transfer and storage only facilities are considered suitable in select commercial and industrial areas developed with hazardous waste generators and select park and open space lands throughout the County.

## Waste Reduction

The optimal form of hazardous waste management includes: (1) source reduction (i.e., actually reducing the amount of wastes being generated by either substituting alternative raw materials or altering the production process); and (2) on-site recycling (i.e., reusing the generated waste in the production process or as a marketable product). The plan analyzes techniques associated with each method, as well as the opportunities and constraints for government and business to facilitate and implement waste reduction. Opportunities for government include raising business and industry's awareness of the waste reduction potential, and providing technical assistance and information on funding sources. Constraints to businesses include cost and technical barriers. Examples of successful waste reduction efforts in San Mateo County discussed in the plan include the O'Brien Corporation (paint manufacturer) and Etched Circuits (manufacturer of circuit boards). The plan establishes a waste reduction objective of 40% for the period between 1986 and the year 2000, and describes a set of program options which could be pursued. These include:

1. Preparing and distributing waste reduction informational pamphlets.
2. Sponsoring waste reduction seminars, technology transfer workshops, and a public recognition program.
3. Providing cost incentives to business and industry for waste reduction efforts, whenever feasible.
4. Developing waste reduction resource centers.
5. Assisting firms in assessing their waste reduction potential.
6. Requiring firms generating large volumes of hazardous waste to submit waste reduction plans.

## Small Quantity Generators

Small quantity generators include businesses and households that produce less than 12 tons of hazardous waste per year. Individually, hazardous waste from small quantity generators may not appear significant but, collectively, it represents a critical component of the total waste stream, particularly when such wastes are likely to be disposed of improperly. While many businesses are acting responsibly in the management and disposal of hazardous waste, others tend to be unaware of State regulations that apply to them, or do not have the resources or technical expertise to manage their hazardous waste in a legal manner. Households also are constrained by the lack of convenient and inexpensive disposal options.

The plan analyzes opportunities and constraints toward proper management of wastes produced by small quantity generators. Key among the opportunities is a comprehensive identification of waste generators and assurance that the wastes are being managed in a legal manner. Toward these ends, the County has entered into a Memorandum of Understanding (MOU) with the State Department of Health Services to locally enforce many existing hazardous waste management laws. To date, approximately 80% of the waste-generating firms in the County

have been identified and are inspected regularly to assure that wastes are being handled in a legal and environmentally safe manner. Other opportunities disclosed by the plan include further identification efforts, educational and informational assistance, technical assistance, and efforts to increase convenience and reduce costs when managing hazardous waste.

The plan describes a set of program options which could be pursued. These include:

1. Preparing and distributing information brochures which would (a) inform businesses of the legal requirements for proper management of hazardous waste, and (b) inform households of disposal options and alternatives to household hazardous waste.
2. Establishing a semi-permanent household hazardous waste transfer station which operates on a regular basis, at a conveniently located site, and incorporates waste segregation and recycling measures.
3. Striving to establish a permanent household hazardous waste transfer station and/or neighborhood or areawide collection program, which could include a curbside collection service.

In mid-1989, the County will be establishing a semi-permanent household hazardous waste transfer station, to operate on a regular basis.

#### Contaminated Sites

Contaminated sites are known to exist in San Mateo County, where hazardous waste has been allowed to infiltrate into the soil and groundwater supply. The sites range from those with leaking underground storage tanks to those with abandoned disposal facilities such as evaporation ponds or landfills. The plan identifies seven contaminated sites within the County which are associated with past disposal practices. In addition, there are approximately 200 cases involving leakage from underground storage tanks which are related to recent or ongoing operations. These sites are in various stages of clean-up through efforts of the County Department of Health, in coordination with the State Department of Health Services, the San Francisco Regional Water Quality Control Board, and affected property owners.

To avert future leakage incidents, the County has adopted an ordinance regulating storage of hazardous substances in underground tanks. Other local efforts endorsed by the plan include the County continuing its integral role in the timely and effective clean-up of known contaminated hazardous waste sites through coordination with relevant federal, state and regional agencies, and establishing a program, as mandated by State law, to require public disclosure of known contaminated hazardous waste sites in the County prior to time of development.

#### Transportation Routes

Truck transport is the primary form of hazardous waste movement within San Mateo County. Hazardous waste transit within the County is the result of both local and out-of-County waste generation. Since San Mateo County is both an exporter and importer of hazardous waste and provides a key transportation

link in the region, the potential for accidental release of wastes while in transit is a significant concern. Of the approximately 210 miles of freeways, expressways and highways in the County, the Bayshore Freeway (U.S. Route 101) is the most heavily traveled in terms of truck traffic, and traverses the major industrial areas of the County. Congestion occurs along many arterials and freeway sections during the morning and afternoon peak commute hours, and other times as the result of sporting event, shopping center, and airport traffic.

Transportation routes selected for hauling hazardous waste should minimize the risk to people, property, and the environment from potential accidents. Toward this end, the plan establishes criteria for selection of transportation routes and identifies preferred routes for both intra- and inter-County hazardous waste transport. In general, route selection should (1) minimize the time and distance that hazardous waste is in transit; (2) avoid residential neighborhoods and environmentally sensitive habitats; (3) avoid peak traffic hours and congested conditions; (4) minimize use of local roads; and (5) provide adequate emergency response services.

### Emergency Response

Hazardous materials are transported and stored in great volume each year throughout San Mateo County, thus posing a risk of accidental release or spills. The potential hazards of accidental release will vary widely depending upon the chemical properties of the materials involved. When hazardous spills occur, responses such as traffic control, source identification, technical assistance, decontamination, and clean-up of the site may be required. Often, spills cannot be handled by an individual or any single governmental body acting alone, but require the services and coordinated efforts of many agencies.

In San Mateo County, the Area Emergency Services Council maintains principal responsibility for coordination of all major County emergencies. To facilitate effective emergency response, the Council has prepared a plan which: (1) establishes a multi-agency hazardous materials emergency response team, (2) defines the responsibilities and tasks for each participating agency, and (3) prescribes a set of pre-emergency planning measures. San Mateo County's hazardous materials emergency response efforts have been formally acknowledged by the Federal Emergency Management Agency (FEMA) as exhibiting exemplary professionalism and proven results. The plan recommends continuance of existing County efforts.

### Policies and Implementation

The plan culminates with a set of 30 policies which identify programs the County will pursue to achieve the stated goals. An implementation program follows which describes specific activities and accomplishments associated with each policy, as well as establishes schedules, identifies responsible participants, and develops a cost sharing formula.

Key policies include:

1. Establishing a "fair share" responsibility for providing hazardous waste management capacity.
2. Requiring conformance with the siting criteria.
3. Instituting an aggressive inventory program to comprehensively identify hazardous waste generators.
4. Improving upon existing efforts to investigate and prosecute violators of hazardous waste laws.
5. Promoting waste reduction through measures including:
  - a. Preparing a waste reduction informational brochure.
  - b. Sponsoring waste reduction seminars and a public recognition program.
  - c. Establishing waste reduction resource centers in select public libraries.
  - d. Providing waste reduction referral assistance.
6. Assisting small quantity generators through measures including:
  - a. Preparing informational brochures aimed at small businesses and households.
  - b. Establishing a semi-permanent household hazardous waste transfer station.

The estimated aggregate cost for implementing the plan's policies range between approximately \$300,000 and \$400,000 per year. These costs will be divided between the County Solid Waste Fund and the local jurisdictions in the County, including San Mateo County.

A funding allocation formula has been developed which determines the proportionate contribution for each jurisdiction. The formula is based on relative population, hazardous waste generation (number of firms and tonnage), and existing treatment capacity per jurisdiction. An unspecified portion of local government's costs may be offset by State grant programs as well as fines and penalties derived from hazardous waste management law violations.



# Goals and Objectives



## GOALS AND OBJECTIVES

Planning is the process of goal attainment. Goals are generalized expressions of a desired end, while objectives are more specific, action oriented statements intended to qualify the scope and meaning of the goal. The following set of goals and objectives provided guidance in the preparation of the San Mateo County Hazardous Waste Management Plan. Each recognizes that San Mateo County will assume its fair share of responsibility for the management of hazardous waste.

### GOAL

1. Ensure that hazardous waste in San Mateo County is managed in a manner which will: (a) protect public health and safety, and (b) preserve the County's economic viability.

### OBJECTIVES

- a. Establish a comprehensive program for the management of hazardous waste in San Mateo County which will provide a basis for future hazardous waste management decisions.
- b. Utilize existing data sources to quantify the current and projected hazardous waste stream in San Mateo County.
- c. Determine the need for hazardous waste management capacity in San Mateo County, and establish a process which will assure that suitable sites either remain or become available for needed hazardous waste management facilities, including treatment, transfer, storage, and disposal facilities. Need shall be based upon San Mateo County waste generation; however, the plan shall allow local jurisdictions to approve a facility to meet regional or statewide needs as well.
- d. Formulate siting criteria and identify general areas within San Mateo County which could accommodate the expansion of existing, or siting of new hazardous waste management facilities.
- e. Improve the hazardous waste management capability for small quantity generators, particularly small businesses and households.
- f. Pursue a timely and effective cleanup of contaminated hazardous waste sites in San Mateo County.
- g. Monitor safe transport of hazardous waste from the source of generation to points of management.
- h. Facilitate expeditious and streamlined permitting of on-site hazardous waste management facilities.

## **GOAL**

2. Reduce the amount of hazardous waste generated in San Mateo County.

### **OBJECTIVE**

Develop strategies to measurably reduce the amount of hazardous waste generated in San Mateo County. Strategies shall emphasize source reduction and on-site recycling.

## **GOAL**

3. Improve public confidence in government and industry's ability to safely manage hazardous waste.

### **OBJECTIVES**

Develop a community relations program which emphasizes:

- a. That the high quality of life and economic prosperity which is characteristic of California is dependent, in part, upon the production and use of manufactured goods. One consequence of the production and use of such goods is the generation of hazardous waste.
- b. That waste reduction is the optimal approach to hazardous waste management, and methods are available to reduce a significant amount of the hazardous waste stream.
- c. That the prevailing mode of landfill disposal of untreated hazardous waste will be illegal after 1990.
- d. That treatment technologies are available to render hazardous waste less hazardous.
- e. That facilities to treat hazardous waste involve standard industrial operations, which can be safely managed and regularly monitored by industry and government, respectively.

## **GOAL**

4. Ensure maximum cooperation between government, industry and the public when planning for hazardous waste management.

### **OBJECTIVES**

- a. Establish and continue an open, participatory process in the preparation of the San Mateo County Hazardous Waste Management Plan.
- b. Coordinate with the Association of Bay Area Governments and other counties in the region the establishment of an integrated regional approach to hazardous waste management.

# **Environmental Setting**



## ENVIRONMENTAL SETTING

San Mateo County, located just south of San Francisco, is characterized by a largely urban incorporated Bayside, and a predominantly rural Coastside. The County covers approximately 554 square miles, 80% of which is land area, while the remainder includes inland waters and San Francisco Bay. The County is bounded by the City and County of San Francisco on the north, San Francisco Bay on the east, Santa Clara and Santa Cruz Counties to the south, and the Pacific Ocean on the west.

The topography of the County is extremely varied. Elevation ranges from sea level to 2,572 feet. The Santa Cruz Mountains, running in a north-south direction, divide the County into two distinct regions, the Bayside and the Coastside. Much of the Bayside consists of mudflats, marshes, artificial fill and broad alluvial plains. This level, low-lying region rises into gently rolling foothills, increasing in slope to 15-30%. The San Andreas Fault parallels the Santa Cruz Mountains, demarcating the end of the Bayside foothills and the beginning of the mountain range.

The topography of the Santa Cruz Mountains is generally rugged with densely forested slopes often exceeding 50%, particularly on the western side of the range. Skyline Ridge, which forms the crest of the mountains, is fairly level and grass-covered, providing a number of spectacular vistas of the Pacific Ocean and Bay Area.

Coastside topography ranges from sloping foothills abutting the western side of the mountains to broad, nearly level coastal terraces. Numerous small valleys created by streamflow dissect the foothills and coastal terraces moving toward the sea. Features along the shoreline range from wide, sandy beaches to rocky coves. Where wave action has eroded the coastal terraces, high, steep cliffs rise above the ocean.

San Mateo County is comprised of 20 locally governed cities and a sizable unincorporated area governed by the County Board of Supervisors. The majority of the cities occupy the low-lying Bayside plain, with most of the County's population situated between State Highway 280 on the west, and Highway 101 on the east. The total population of San Mateo County is approximately 617,100 persons (1988).

Map 3-1 illustrates the location of San Mateo County within the San Francisco Bay region, Map 3-2 depicts the relative topography of San Mateo County, and Map 3-3 identifies the County's 20 cities.



# San Francisco Bay Region Counties



County Boundaries - - - - -

APR.88/rp



# San Mateo County Relief Map





# San Mateo County Municipalities and County Sub-Areas





# 4

## Regulatory Environment



## REGULATORY ENVIRONMENT

In the past several years, federal, State and local legislators have aggressively adopted statutes which regulate hazardous waste. This has resulted in an extensive body of law administered by a multiplicity of public agencies. Below is a brief summary of key hazardous waste legislation.

### FEDERAL

#### 1. Resource Conservation and Recovery Act (RCRA) - 1976

The principal federal legislation involving hazardous waste management is the Resource Conservation and Recovery Act of 1976 (RCRA). RCRA directs the Environmental Protection Agency (EPA) to: (1) formulate regulations identifying the characteristics of hazardous waste, (2) prepare a list of hazardous wastes subject to regulation, (3) establish a hazardous waste program developing standards and permit requirements applicable to the treatment, storage and disposal of hazardous waste, (4) initiate a manifest system for hazardous waste transport, and (5) enforce permit controls over hazardous waste storage and disposal facilities. The EPA is further authorized to sue to stop any hazardous waste activity which may present an "imminent and substantial" danger to public health or the environment.

#### 2. RCRA Hazardous and Solid Waste Amendments (HSWA) - 1984

RCRA was reauthorized by Congress in 1984 with a set of amendments focusing on the phase out of hazardous waste land disposal. Key provisions include: (1) a prohibition on the landfill disposal of liquids by 1985, and all untreated hazardous wastes by 1990, (2) requirements that existing landfills be installed with groundwater monitoring and that financial insurance be provided, and (3) that new surface impoundments be installed with double lining and a leachate collection system. The landfill phase out program was modeled after existing California legislation.

#### 3. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - 1980

The Comprehensive Environmental Response Compensation and Liability Act, also known as CERCLA or the "Federal Superfund," provides for hazardous waste clean up and management, supplementing RCRA requirements. The Act provides: (1) funds to clean up abandoned hazardous waste sites and compensate damaged parties, (2) emergency response to and clean up of hazardous material spills, (3) reimbursement of funds from responsible parties, and (4) matching funds to support individual State clean up efforts.

#### 4. SuperFund Amendments and Reauthorization Act (SARA) - 1986

The Federal Superfund was reauthorized by Congress in 1986, with a set of amendments focusing on emergency planning and "community right-to-know" reporting requirements. SARA requires states to establish emergency planning districts and prepare emergency response plans for possible

unauthorized releases of hazardous materials. Firms handling "extremely hazardous substances" are required to submit inventory data and facility site plans for public disclosure purposes.

5. Toxic Substances Control Act (TSCA) - 1976

The Toxic Substances Control Act authorizes the EPA to regulate the manufacture, distribution in commerce, processing, use, or disposal of chemical substances which may present an "unreasonable risk" to human health or the environment. Existing products may be seized or recalled at any time.

6. Hazardous Materials Transportation Act - 1974

The Hazardous Materials Transportation Act directs the Department of Transportation to: (1) prepare a list of materials which, when transported, pose an "unreasonable risk" to health and safety or property, (2) establish criteria and regulations for the safe transportation of hazardous materials, and (3) issue orders directing compliance. The Department is authorized to obtain a court order suspending or restricting any transportation of hazardous material which creates an "imminent hazard."

7. Federal Water Pollution Control Act (FWPCA: The Clean Water Act) - 1972 and Water Quality Act - 1987

The Clean Water Act was amended by the Water Quality Act of 1987, and establishes a comprehensive program, administered by the EPA, for control of pollutants discharged into the nation's waters. Effluent standards are established and permits required. In California, discharge permits are issued by the State Regional Water Quality Control Board.

## STATE

1. Hazardous Waste Control Act - 1972

The Hazardous Waste Control Act was adopted to establish a program for the safe handling, storage, use and disposal of hazardous wastes. The Department of Health Services is delegated primary authority over hazardous waste management and directed to: (1) develop a list identifying hazardous and extremely hazardous waste, (2) establish standards for the use and operation of facilities maintaining hazardous waste, (3) issue a Hazardous Waste Facilities Permit to operations complying with established standards, and (4) adopt regulations applying to hazardous waste transport, including hauler registration.

2. Minimum Standards for Management of Hazardous and Extremely Hazardous Waste (Title 22) - 1977

The State Department of Health Services maintains a comprehensive program to control transportation and disposal of hazardous waste. A chief component of the program is Title 22 of the California Code of Regulations, "Minimum Standards for Management of Hazardous and Extremely Hazardous Waste," which establishes: (1) definitions and criteria for the identification of hazardous and extremely hazardous wastes, (2) a Hazardous Waste Facilities Permit program for regulating all facilities which store, treat

or dispose of hazardous waste, (3) a manifest system for the identification and tracking of each load of hazardous wastes transported in the State, and (4) a registration program for the identification of waste haulers and their vehicles.

The State program also involves: (1) field surveillance and enforcement teams to ensure compliance, (2) procedures for clean up of abandoned sites, and (3) a program for stimulating resource recovery and encouraging development of hazardous waste treatment facilities. Hazardous waste inventory data is primarily gathered through the following program activities: (1) manifests, (2) required reporting by treatment, storage and disposal facilities, and (3) facility inspections.

Although the Department maintains primary responsibility for enforcement of hazardous waste requirements, enforcement may be transferred to local health officers, including right to enter and inspect facilities, obtain samples, stop vehicles suspected of transporting hazardous and inspect records without appointment. In 1983, the County entered into a Memorandum of Understanding with the Department establishing local responsibilities.

3. State SuperFund (SB 618) - 1981

The State Superfund provides: (1) funds to clean up abandoned contaminated hazardous waste sites, (2) ten percent matching funds to meet Federal Superfund requirements, and (3) up to \$1 million annually to assist local agencies in hazardous material spill response. Existing law prohibits the expenditure of public funds until it is determined that responsible parties will not take the proper remedial action or that they will not respond in a timely manner. State funds may be immediately applied should a real or potential threat to public health exist.

4. Hazardous Substances Highway Spill Containment Act - 1980

The California Highway Patrol (CHP) is responsible for enforcing federal and State regulations controlling transportation of hazardous chemicals, with authority to inspect vehicles, cargo and containers. In the event of a hazardous substance spill, the Highway Spill Containment Act empowers the CHP with scene management responsibility, while Caltrans is charged with clean-up authority.

5. Sher Bill (AB 1362, 3565, 3444, 3781) - 1984

The Sher Bill regulates the storage of hazardous materials in underground tanks. It requires counties to permit and regularly inspect all underground tanks in its jurisdiction. The bill establishes requirements relating to tank design, construction, and monitoring, and requires that unauthorized releases be reported within 24 hours.

6. Katz Bill: Toxic Pits Clean-Up Act (AB 3566) - 1984

The Katz Bill prohibits the discharge of liquid hazardous waste into a surface impoundment within one-half mile of a potential source of drinking

water. Beyond one-half mile, impoundments must be equipped with double lining, and leachate collection and groundwater monitoring systems installed.

7. Waters Bill (AB 2185, 2187) - 1986

The Waters Bill requires any business that stores or uses a hazardous material (500 pounds, 55 gallons, or 200 cubic feet compressed gas) to file an emergency response plan with State or local health agencies which discloses the types and amounts of hazardous substances maintained on the site.

8. La Follette Bill (AB 3777) - 1986

The La Follette Bill expands on the Waters Bill by requiring inventory data to include estimated total amounts of hazardous waste present on the site. It also requires the registration of businesses handling "acutely hazardous materials," and that firms prepare detailed risk management and prevention programs.

9. Roberti Bill: Hazardous Waste Management Act (SB 1500) - 1986

The Roberti Bill prohibits the land disposal of untreated hazardous waste by May 1990.

10. Tanner Bill (AB 2948) - 1986

The Tanner Bill provides counties with authority and funding to develop countywide plans for the management and reduction of hazardous waste. The plans must include identification of general areas for future siting of needed new facilities.

11. Farr Bill: Hazardous Wastes Reduction, Recycling, and Treatment Research and Demonstration Act (AB 685) - 1985

The Farr Bill appropriates \$1 million dollars annually for hazardous waste reduction research and demonstration efforts.

## LOCAL

1. Memorandum of Understanding to Enforce Hazardous Waste Regulations - 1983

In August 1983, the San Mateo County Board of Supervisors adopted a resolution authorizing a Memorandum of Understanding between the State Department of Health Services and the County Health Department on matters concerning hazardous waste enforcement authority. Under the terms of the Memorandum, the County Health Officer is designated a State agent to enforce certain minimum standards and regulations controlling hazardous waste facilities, including monitoring facilities where hazardous waste is stored for less than 90 days. The County maintains authority to enter and inspect a factory, plant, construction site or other areas where wastes are handled, and gather evidence to determine whether the waste is hazardous. The State, on the other hand, retains authority for the issuance of Hazardous Waste Facility Permits, registration of hazardous waste transporters

and surveillance, and enforcement relating to facilities where hazardous wastes are stored greater than 90 days, processed or disposed.

The County and State are jointly responsible for: (1) declaring an emergency in the event of accidental release of a toxic substance, (2) responding to citizens' complaints relating to their respective responsibilities, and (3) informing other legally responsible agencies of relevant hazardous material or waste conditions. The intent of the agreement is to ensure a high level of cooperation and coordination in the enforcement of State hazardous waste regulation, and ensure that limited public resources are utilized in the most effective manner.

Pursuant to the Memorandum of Understanding, the County Health Department has undertaken a program toward comprehensive identification and licensing of hazardous waste generators within San Mateo County. Through survey and inspection efforts, the Health Department has identified and issued permits to approximately 900 commercial and industrial hazardous waste generators (November 1987), which is considered representative of 80% of the hazardous waste generators Countywide.

## 2. Storage of Hazardous Substances in Underground Tanks Ordinance - 1983

In 1983, the County Board of Supervisors adopted an ordinance regulating storage of hazardous substances in underground tanks to protect against unauthorized discharge. Modeled after the Sher Bill, the ordinance requires: (1) local permit approval for new underground storage tanks to ensure maximum containment, (2) installation of the monitoring system for existing tanks, and (3) mandatory reporting of unauthorized leaks. The County Health Officer is charged with enforcement, and a variance procedure is provided. Since 1983, the Health Department has been actively identifying and registering underground tanks. Approximately 1,500 - 2,000 tanks associated with 787 facilities (November 1987) have been registered.

## 3. Local Administration of Waters and La Follette Bills

Requirements for business inventory and emergency response plans mandated under the Waters and La Follette Bills are administered by the County Health Department. Since 1986, the Department has accepted plans from approximately 670 - 700 firms in San Mateo County. It is anticipated that at least 1,000 firms will be required to submit plans by project completion.

## 4. Area Emergency Services Council Hazardous Materials Incident Contingency Plan - 1984/Area Office of Emergency Services

Area Emergency Services Council was established by a joint powers agreement between the County and its cities, and is responsible for preparing for and responding to all major emergencies in the County. The Council oversees the Area Office of Emergency Services which is staffed by emergency services personnel, and has the authority to command and coordinate local emergency forces during a state of emergency. A Countywide mutual aid agreement is currently in effect for general disaster preparedness and response services. The County has adopted a Hazardous Materials Incident

Contingency Plan which establishes responsibilities and actions required to provide coordinated response to hazardous material incidents within the County. In the event of an emergency, the Area Office will coordinate requests for outside assistance and provide a mobile command post with driver, if required.

5. Industrial Emergency Council

The Industrial Emergency Council was formed in 1979 as a private/public partnership between industry and government agencies in San Mateo County aimed at reducing risk from the production, use and transporting of large quantities of hazardous materials through emergency preparedness and response. The Council has been implementing a two-phased hazardous material incident response system involving: (1) acquisition of an emergency-equipped hazardous material response van, and (2) development of a hazardous material emergency response training program for local industry and government employees.

# **Treatment Options for Hazardous Waste**



## TREATMENT OPTIONS FOR HAZARDOUS WASTE

Land disposal of untreated hazardous waste has proven an unacceptable method of hazardous waste management and, in California, will be prohibited by 1990. It is thus imperative that environmentally sound and economically viable treatment and disposal technologies become available to hazardous waste generators.

An effective hazardous waste management program should encompass a hierarchy of strategies. The optimal form of hazardous waste management is waste reduction. This involves either reducing the amount of waste ultimately produced (source reduction) or recycling it on the site in which it is generated. Waste reduction as the preferred form of hazardous waste management is comprehensively analyzed in a separate chapter of the plan.

Once hazardous waste is produced and cannot be recycled or reused, treatment then becomes the next optimal form of hazardous waste management. There are three general means of treating hazardous waste: physical treatment, chemical treatment and biological treatment. Incineration or thermal technique is another method of managing wastes, but is considered more a destruction technology, rather than one of treatment. To varying degrees, each of these methods can significantly reduce hazardous waste volumes, although a residual amount of waste requiring land disposal does result. Such wastes are then contained in a specifically engineered facility known as a residuals repository.

This chapter will define hazardous wastes, and describe the treatment and destruction technologies which are available for managing hazardous waste.

### DEFINITION OF HAZARDOUS WASTE

Hazardous waste is legally defined in the California Code of Regulations, Title 22, Article 11. For common application, hazardous waste may be defined as any waste material or mixture of wastes which is toxic, corrosive, flammable, an irritant, or strong sensitizer, and may cause substantial injury, serious illness, or harm to humans, domestic livestock, or wildlife. The characteristics which make a waste hazardous are described as follows:

#### 1. Toxic

Toxic wastes are substances which, when exposed to living organisms, are injurious to human health or the environment. Toxic wastes may include substances in any or all of the following categories.

#### 2. Corrosive

Corrosive wastes are substances which are capable of dissolving other materials when placed in direct contact.

#### 3. Flammable

Flammable wastes are substances which ignite easily under routine conditions due to a low thermal threshold or "flashpoint."

#### 4. Irritant

Irritant wastes are substances that induce inflammation of living tissue.

#### 5. Strong Sensitizer

Strong sensitizer wastes are substances which produce allergic reactions.

Radioactive waste is not included within this definition of hazardous waste, as it is not within the context of this plan.

### **TREATMENT TECHNOLOGIES**

#### 1. Physical Treatment

Physical treatment basically involves processes which separate the components of a waste stream without changing its chemical nature. Physical treatment is generally intended to reduce waste volume and may precede other treatment applications.

##### a. Gravity Settling

Gravity settling involves allowing suspended solids to settle from liquids under natural gravitational forces. The clarified liquid is then decanted off. The process requires a great deal of time, as well as space for special tanks or holding ponds. The technique is generally applied to aqueous waste contaminated with insoluble compounds, and is commonly used in industrial and municipal wastewater treatment, as well as by paint manufactures. The technique is relatively inexpensive, with efficiencies greater than 80%.

##### b. Flotation

Flotation involves bubbling air through a liquid to separate out finely divided solids which attach to the air bubbles and rise to the surface. The remaining liquid is then drained from the bottom of the tank. The technique is relatively inexpensive, and most often applied to suspended solids, oils and greases associated with petroleum refinery and mineral extraction operations.

##### c. Centrifugation

Centrifugation involves separating a waste mixture into constituents of different densities through rapid spinning in a centrifuge. The technique is often applied to oil/water mixtures, aqueous sludges, resins and lacquer pigments, and commonly practiced in paint manufacturing. The technique is more expensive than other physical processes, although generally faster, and at least 90% efficiencies can be attained.

##### d. Filtration

Filtration involves separation of suspended solids from liquid waste streams by passage through a porous filter (such as granular sand, coal, woven cloth or fibrous mats). This technique is usually applied

to solids which cannot be removed by other processes. Filtration is a well developed, widely used practice with many applications.

e. Electrodialysis

Electrodialysis involves separating the positively and negatively charged materials in a waste stream by application of an electric current. The technique may be applied to recovering metals from aqueous solutions, particularly heavy metals, and is utilized in the metal plating industry. Efficiency is generally good, though costs are dependent on the concentration of the solution being treated.

f. Reverse Osmosis

Reverse osmosis involves separating dissolved waste materials from a liquid solution by passage through a "semi-permeable" membrane, e.g., an acetate or nylon sheet. Reverse osmosis is often preceded by filtration to protect the membrane. The method can be used for both heavy metal and organic solutions, as well as inorganic aqueous solutions. It is a relatively new technology, but is increasingly being used as secondary treatment in metal plating and pharmaceutical applications. Efficiency is very good (98-98% for dissolved solids), although costs are relatively high.

g. Ultrafiltration

Ultrafiltration is similar to reverse osmosis, but applies to solutions with larger dissolved substances and suspended materials. The process involves separating molecules by size using a membrane. Ultrafiltration is effective for heavy metal aqueous solutions and has applications in the metal coating industry. Efficiencies are quite high, as are the costs.

h. Evaporation

Evaporation involves concentrating the volume of a hazardous liquid through vaporization. The vaporized liquid may be recovered, recycled or released into the air. Approaches include use of ponds or lagoons with direct sun exposure or, alternatively, a closed system involving the application of heat to a metal chamber. Evaporation is customarily used for the dewatering of sludges and slurries, including the concentrated rinse waters from electroplating operations. The valuable constituents of a waste stream may be recovered through evaporation, such as the reconcentration of electroplating solutions. Efficiencies greater than 90% are attainable, although the method may be energy-intensive and, hence, costly.

i. Distillation

Distillation involves applying heat to a waste stream and separating constituent liquids according to their specific boiling point. This technique is most often applied to organic liquids, particularly when recovering solvents, and mostly applied in the chemical and petroleum industries. Efficiencies greater than 99% are attainable, although the process is energy-intensive.

j. Steam Stripping

Steam stripping, like distillation, relies on differences in boiling points to separate the components of a waste stream. The process involves introducing waste liquids at the top of a cylindrical tower while steam is blown into the bottom. The steam vaporizes certain hazardous liquids, and the resultant gas is usually recondensed by activated carbon in the cylinder. This technique is used extensively by industry for organic liquids, particularly during site clean-ups. Efficiencies greater than 90% are attainable, although the process is energy-intensive.

k. Adsorption

Adsorption involves passing liquid hazardous waste through a bed of activated carbon or resin, where selective dissolved contaminants are trapped in the pores of these materials. Adsorption is most often used to separate organic constituents, such as solvents in low concentrations and phenols, such as PCB's, from aqueous waste streams. Treatment efficiencies decline as more contaminants are captured and, therefore, the carbon or resin bed must be replenished regularly (usually through a thermal or backwashing process). With proper replenishment, most adsorption techniques can reduce contaminants by 80-90%, although the process is energy-intensive.

l. Solvent Extraction

Solvent extraction involves mixing a solvent with the hazardous waste such that the solvent extracts specific hazardous organic components from the waste stream. The process requires further treatment to separate the solvent from the organic contaminant for reuse. Solvent recovery is most often applied to organic liquids, phenols and acids, and a commonly used industrial process in the chemical manufacturing and dyeing industries. Costs are relatively high for the solvent, and efficiency is reduced by generation of a secondary solvent-based waste liquid.

2. Chemical Treatment

Chemical treatment involves processes which alter the hazardous wastes by chemical reactions. The chemical reactions either detoxify the waste, reduce toxicity sufficient for other treatment applications, or improve upon the efficiency of a preceding physical method. The costs of chemical treatment tend to be higher than physical treatment.

a. Neutralization

Neutralization involves adjusting the pH of the waste stream by mixing proportionate amounts of acids with bases (or caustics). The technique is well established and commonly applied in the metal plating, steel making, tanning and petrochemical industries. Efficiencies greater than 90% are attainable, though the approach can be relatively expensive.

b. Precipitation

Precipitation involves the formation of solids from a solution through a chemical reaction. The technique is well established and commonly applied in the electronic and metal finishing industries, when removing metals and arsenic from industrial wastewaters. Efficiencies are good (80%), though the approach can be relatively expensive.

c. Oxidation-Reduction

Oxidation-reduction methods use common chemical reactions to detoxify a wide range of both organic and inorganic wastes, including cyanides, pesticides and metals. Oxidation involves destroying materials by chemically combining them with oxygen; reduction is the opposite of oxidation. In this process, metals are removed from solution by plating, or compounds are detoxified by either the removal of oxygen or the addition of hydrogen. The techniques are most commonly applied in the metal plating industry. Efficiencies greater than 90% are attainable and the approach is relatively inexpensive.

d. Ion Exchange

Ion exchange involves separating dissolved inorganic substances from an aqueous solution by passage through treated resin. Ions, or charged atoms, in the resins are exchanged with inorganics in the liquids. The technique is used extensively in the electroplating for recovery of heavy metals removal of cyanide. Efficiencies greater than 90% are attainable, although the technique is relatively expensive.

e. Chemical Dechlorination

Chemical dechlorination involves chemical reactions which selectively break down highly chlorinated compounds into a less hazardous residue. The technique is effective for removing PCB's from transformer oil, such that the oil can be reused, and can be applied to other chlorinated solvents. Efficiencies greater than 90% are attainable, although the process is moderately expensive.

f. Acidification

Acidification is used to treat materials that form an emulsion with water. The emulsified material is treated with sulfuric acid which "breaks" the emulsion. This process results in the separation of the oil and water. The oil is now suitable for recycling. The aqueous layer is then neutralized and discarded. The method is commonly used in recovering motor and cutting oils. Efficiencies greater than 90% are attainable, although the process is more expensive than physical treatments.

g. Stabilization and Solidification

Stabilization and solidification sometimes considered disposal techniques rather than treatment. The process involves isolating the

hazardous wastes and preparing them for land disposal when further treatment isn't possible. Stabilization limits the solubility or mobility of the hazardous constituents in a waste, while solidification encloses the waste in a solid or soil-like material. The two most developed approaches are: (1) cement-based and (2) pozzolanic processes. Cement-based processes involve adding the waste to a cement and water mixture for hardening, whereas the pozzolanic process mixing the waste with limestone. Both are used for a variety of inorganic, while the pozzolanic is also commonly applied to sewage sludge and paint wastes. These techniques raise a potential for wastes leaching into the soil or groundwater, and can be expensive due to the added weight of the cement and limestone, respectively. Other stabilization/solidification techniques which are not commonly used and are expensive include: (1) thermoplastic techniques, (2) organic polymer techniques, (3) surface encapsulation, and (4) glassification.

### 3. Biological Treatment

Biological treatment involves processes which utilize micro-organisms to absorb or decompose organic hazardous wastes, transforming them into water, carbon dioxide, and simpler, less toxic molecules. This approach is the most cost-effective means for treating aqueous organic waste streams, and has been successfully applied to a wide variety of industrial wastes, as well as municipal waste waters.

#### a. Activated Sludge

Activated sludge involves decomposing organic wastes with low solid composition with high concentrations of micro-organisms. After sufficient mixing and aeration, a sludge settles out for final disposal. The technique is commonly used in the petrochemical industry, as well as municipal sewage treatment facilities, and is effective when treating chlorinated compounds, aromatics, cyanide wastes, as well as low concentration metal solutions (chromium, zinc and iron). Efficiencies between 80-90%, are attainable and the technique is considered inexpensive.

#### b. Trickling Filter

The trickling filter technique involves spraying organic hazardous waste over and then allowing it to trickle through a bed of rock or synthetic material coated with micro-organisms. The technique is commonly used by paint manufacturers, as well as municipal sewage treatment facilities, and is effective when treating cyanides, phenols and ketones. Efficiencies up to 90% are attainable and the technique is inexpensive to operate.

#### c. Aerated Lagoons and Waste Stabilization Ponds

This technique involves biodegradation over long periods of time in large earthen lagoons or large shallow ponds, respectively. The oxygen necessary to facilitate waste decomposition is introduced through mechanical agitation or water sprays. Both approaches are used in oil refining and municipal sewage treatment operations, and are effective

when treating oil and phenol-containing wastes. Efficiencies greater than 80% are attainable and the approaches are inexpensive to operate, although large areas of land are required.

d. Anerobic Digestion

Anerobic digestion involves biodegradation of simple organic wastes in the absence of oxygen. The technique is commonly used municipal waste water treatment operations. Efficiencies greater than 80% are attainable and the process is considered inexpensive.

4. Thermal Techniques

Thermal techniques, or incineration, rely on the application of extreme heat to destroy the hazardous waste. The processes are considered among the more optional means of managing hazardous waste. The techniques significantly reduce waste volumes, and energy expended may be recovered as heat or electricity. Technology is available to properly treat resulting air emissions, although ash residues and residues from the treatment of air emission must be disposed of hazardous waste.

a. Liquid Injection

Liquid injection is the most common method of incineration, and a proven technology. The technique involves injecting fine droplets of liquid waste into a combustion chamber. Liquid injection is most widely used for solvents, PCB's, pesticides and herbicides. Efficiencies of 99.99% are attainable and maintenance costs are considered low.

b. Rotary Kiln

Rotary kiln incineration is also commonly used and proven technology. The technique involves injecting solid, liquid and gaseous wastes into one end of a tilted, rotating chamber. Rotation enhances combustion, by mixing the waste with air, and moves the waste through the combustion zone. Residual ash is continually removed from the lower end of the chamber. The technique is most widely used for solvents, paint products, PCB's and waste gases. Efficiencies of 99.99% are attainable, though costs are relatively high.

c. Fixed Hearth

Fixed hearth incineration involves sequenced burning in two chambers for primary and secondary combustion. The technique is appropriate for sewage, sludges, tars, infectious wastes, and liquid combustible wastes. Efficiencies of 99.99% are attainable, though maintenance costs are quite high.

d. Cement Kiln

Cement kilns used for the production of cement, may be retrofitted to handle hazardous waste. The technique is appropriate for organic solvents and oils. Efficiencies of 99.99% are attainable, and energy may be reclaimed for use in the production of cement.

## CATEGORIZING TREATMENT TECHNOLOGIES INTO GENERALIZED TREATMENT METHODS

For planning purposes, the State Department of Health Services has categorized available treatment technologies into seven "generalized treatment methods." An analysis of each treatment method relative to specific treatment techniques and applicable waste group is shown below:

GENERALIZED TREATMENT METHOD	TREATMENT TECHNIQUES WHICH MAY BE INVOLVED	APPLICABLE WASTE GROUP
Aqueous Treatment -	Distillation Evaporation Steam Stripping Gravity Settling Centrifugation Reverse Osmosis Adsorption Solvent Extraction Chemical Dechlorination Oxidation Activated Sludge Trickling Filter Aerated Lagoons/Waste Stabilization Ponds Aerobic Digestion	Pesticides Biological Waste *Organic Liquids
Aqueous Treatment - Metals/Neutralization	Gravity Settling Filtration Flotation Flocculation Centrifugation Evaporation Ultrafiltration Reverse Osmosis Electrolysis Adsorption Ion Exchange Oxidation/Reduction Precipitation Neutralization	Metal-Containing Liquids Cyanide and Metal Liquids Non-Metallic Inorganic Liquids Gas Scrubber Waste
Incineration	Liquid Injection Rotary Kiln Fixed Hearth Cement Kiln	PCPs and Dioxins Halogenated Organic Sludges and Solids Non-Halogenated Organic Sludges and Solids Dye and Paint Sludges and Resins Contaminated Soil *Waste Oil *Halogenated Solvents *Non-Halogenated Solvents

GENERALIZED TREATMENT METHOD	TREATMENT TECHNIQUES WHICH MAY BE INVOLVED	APPLICABLE WASTE GROUP
Solvent Recovery	Distillation Solvent Extraction Adsorption Ultrafiltration Reverse Osmosis Gravity Settling Centrifugation Steam Stripping Ion Exchange	Halogenated Solvents Non-Halogenated Solvents *Halogenated Organic Sludges and Solids *Non-Halogenated Organic Sludges and Solids
Oil Recovery	Distillation Solvent Extraction Filtration Acidification	Waste Oil Oily Sludges
Stabilization	Cement-Based Process Pozzlanic Process Thermo Plastic Techniques Organic Polymer Techniques Surface Encapsulation Glassification	Metal-Containing Sludges Non-Metallic Inorganic Sludges Asbestos-Containing Waste Pharmaceutical Waste Chemical Toilet Waste Baghouse Waste *Photo Processing Waste *Laboratory Waste Chemicals *Household Wastes
Other Recycling	N/A	Organic Liquids Dye and Paint Sludges and Resins Metal-Containing Liquids Cyanide and Metal Liquids Non-Metallic Inorganic Liquids Metal-Containing Sludges Non-Metallic Inorganic Sludges Pesticides Empty Containers Metal Dust Photo Processing Waste Laboratory Waste Chemicals Household Wastes

\*The generalized treatment method is regarded as a secondary option to a more preferred method identified in the list.



# **6**

## **Inventory of Hazardous Waste Management Facilities in California**



## INVENTORY OF HAZARDOUS WASTE MANAGEMENT FACILITIES IN CALIFORNIA

Hazardous waste may be managed at either an on-site or off-site treatment, storage or disposal facility. An on-site facility consists of a business or operation which manages its own waste, whereas, an off-site facility receives waste from other waste generating firms. Off-site facilities tend to be commercial operations. The primary emphasis of the Hazardous Waste Management Plan will be to assure that sufficient off-site facility capacity is available proportionate to the County's waste generation needs.

There are three general types of off-site facilities which currently accept hazardous waste in California: a land disposal facility, a treatment facility, and a destruction (incineration) facility.

### LAND DISPOSAL FACILITIES

Land disposal facilities accepting hazardous waste are classified either as Class I or Class II-1. Class I facilities have traditionally accepted most types of hazardous waste; however, as of 1990, Class I facilities will not accept untreated hazardous waste. Class II-1 facilities accept only marginally hazardous waste, such as sewer sludge with low concentrations of hazardous material.

There are presently four Class I facilities operating in California, as compared to seven in 1984. These are:

Facility	Type of Disposal Operation
Casmalia Disposal Company (Casmalia, Santa Barbara County)	Landfill for contaminated soils Surface impoundments Disposal area for low concentration PCB's Burial of solidified waste in drums
Chemical Waste Management (Kettleman Hills, Kings County)	Landfill Surface impoundments Burial of solidified waste in drums
IT Corporation (Martinez, Contra Costa County)	Surface impoundments
IT Corporation (Benicia, Solano County)	Surface impoundments Landfill

On March 9, 1988, it was announced that both IT Corporation facilities (Martinez and Benicia) will undergo closure.

There are presently three Class II-1 facilities operating in California, as compared to five in the Bay Area alone, in 1984. These are:

Facility	Type of Disposal Operation
IT Corporation (Imperial County)	Surface impoundments Landfill
Environmental Protection Corporation (EPC) (Kern County)	Landfill Surface impoundment Land farming
Acme Fill (Martinez, Contra Costa County)	Landfill

### TREATMENT FACILITIES

There are approximately 40 off-site treatment facilities throughout California (1986), 8 of which are located in the Bay Area. These include:

Facility	Type of Treatment
Allied Chemical Corporation (Richmond, Contra Costa County)	Sulfuric acid regeneration
Baron-Blaheslee, Incorporated (Newark, Alameda County)	Solvent distillation
Bayday Chemical Company (Santa Clara, Santa Clara County)	Solvent distillation
California Oil Recyclers (Newark, Alameda County)	Oil recycling
Chemwest Industries, Incorporated (Cloverdale, Sonoma County)	Acid neutralization
Romic Chemical Corporation (East Palo Alto, San Mateo County)	Solvent distillation, stripping and extraction
Solvent Services, Incorporated (San Jose, Santa Clara County)	Oil-Water, separation, neutraliza- tion, distillation and solidification (Solvents, acids, caustics and oily wastes)
Stauffer Chemical Company (Martinez, Contra Costa County)	Sulfuric acid regeneration

## DESTRUCTION FACILITIES

The General Portland Cement Company's cement kiln in Lebec (Kern County) is the only off-site hazardous waste incineration facility in California.

## CALIFORNIA WASTE EXCHANGE

In addition to off-site treatment and disposal facilities, the State Department of Health Services administers the California Waste Exchange, which is an industrial referral program for off-site recycling. A regularly updated catalog is distributed throughout the State which lists firms that either have wastes available, or want specific wastes for reuse in their industrial operations.



# Existing Hazardous Waste Stream

Waste Generation  
Management Capacity  
Need for New Facilities





Waste Generation



## EXISTING HAZARDOUS WASTE GENERATION

Throughout the developed Bayside corridor of San Mateo County, there are approximately 3,000 firms which manufacture, use, store or transport hazardous materials. Approximately one-third of these utilize a significant amount of hazardous material in their daily commercial and industrial operations. The predominant industry types include metal fabrication, manufacture of electrical and electronic equipment, chemicals, paints, varnish, lacquer, enamels and allied products. As a by-product of these industrial or manufacturing operations, many of the firms also generate hazardous waste. In addition, a substantial amount of hazardous waste is generated by small commercial businesses, e.g., service stations, auto repair shops, and dry cleaners, as well as residential households.

In recent years, the County Health Department and State Department of Health Services have focused their efforts toward securing a comprehensive understanding of hazardous waste generation. The intent of this section of the Hazardous Waste Management Plan is to quantify the existing (1986) hazardous waste stream in San Mateo County utilizing available hazardous waste generation data sources. This information will be formatted to allow focused attention on different components of the waste stream, including major industry groups, small quantity generators, wastes that are either managed on the premises or transported off site to a treatment or disposal facility, as well as wastes managed within the County and those exported for treatment or disposal elsewhere in the State. The data will be utilized to: (1) determine the need for additional hazardous waste management capacity in San Mateo County, and (2) provide a baseline for future hazardous waste reduction activities. Data collection and interpretation will be an ongoing process whereby more refined and representative information is expected from each successive revision to the plan.

This plan does not preclude the incorporation of new waste groups (e.g., infectious waste) or enhanced analysis of selected waste streams (e.g., out-of-state shipments, pre-treatment sludges, etc.) in future amended editions of the document.

### COUNTYWIDE GENERATION/MANAGED OFF-SITE

#### 1. Manifest Data Sources

##### a. Base Manifest Data

Hazardous waste may be treated or disposed of on the site where it is generated, or transported to an off-site facility for treatment, storage or disposal. The quantities of waste which are transported off site can be viewed as a measure of the County's demand for management capacity. Data for this section was derived from the State "manifest system." The manifest system is a monitoring process which tracks the transport of hazardous waste from point of generation to the ultimate off-site management facility. Manifest data is detailed with respect to waste type and tonnage amounts, and recognized as the most accurate

data source available for hazardous waste management planning. Review of 1986 manifest data indicates that 65,289 tons of hazardous waste were generated in San Mateo County for treatment or disposal at an off-site facility, either within the County or elsewhere in the State. The first column of Table 7-1 organizes these wastes according to waste group.

There are minor discrepancies which exist between data presented in Table 7-1 and the 1986 manifest summary. These are due to County efforts which identified: (1) firms generating waste in San Mateo County which were erroneously assigned to another County's manifest summary, (2) firms located in another county but erroneously included in the San Mateo County summary, and (3) firms which transported waste under manifest, but were not included in the 1986 summary sent to the County.

b. Correction for "Modified Manifest" Data

Certain hazardous wastes, predominantly solvents, non-metallic inorganic liquids and waste oil, may be transported under a "modified manifest" procedure, i.e., a method that does not require detailed manifest reporting. Use of the less detailed reporting system necessitated certain corrections to the hazardous waste generation data base. In particular, the State Department of Health Services informs that approximately 313 tons of hazardous waste liquid were generated in San Mateo County and transported under modified manifest to facilities located outside the County. Due to the modified manifest reporting technique, these wastes were not attributed to San Mateo County and therefore an upward correction of the data is necessary, as reflected in the second column of Table 7-1.

In addition, communication with Bay Area oil transport firms indicate that: (1) approximately 30,509 tons of waste oil were imported into San Mateo County; however, due to the modified manifest reporting system, this oil was attributed to San Mateo County waste generation; and (2) approximately 1,310 tons of waste oil were exported from the County; however, due to the modified manifest reporting system, this oil was not attributed to San Mateo County waste generation. This results in a net 29,199 tons downward adjustment to the manifest data as reflected in the second column of Table 7-1.

More specifically, three waste oil "route service hauler" firms operated in San Mateo County (1986) using the "modified manifest" procedure: (1) California Oil Recyclers, (2) Bayshore Oil Company, and (3) Bay Area Oil Recycling. Through communication with each operator, it was determined that: (1) California Oil Recyclers imported 92% of the total amount of waste oil it manifested as San Mateo County waste, (2) Bayshore Oil Company imported 42% of the total amount of waste oil it manifested as San Mateo County waste, and (3) Bay Area Oil Recycling imported 71% of the total amount of waste oil it manifested as San Mateo County waste. A more detailed analysis of the waste oil stream associated with route service haulers in San Mateo County appears as Table 7-2.

TABLE 7-1

EXISTING HAZARDOUS WASTE GENERATION/MANAGED OFF SITE  
(1986)

WASTE GROUP	AMOUNT FROM MANIFEST DATA SOURCES <sup>1</sup> (Tons/Year)	CORRECTION DUE TO MODIFIED MANIFEST REPORTING TECHNIQUE <sup>2</sup> (Tons/Year)	CORRECTION DUE TO TRANSFER STATION <sup>3</sup> STORAGE (Tons/Year)	ADJUSTED TOTAL (Tons/Year)
Waste Oil	36,410	(-29,199)	(-795)	6,416
Halogenated Solvents	639	(+55)	(-29)	665
Non-Halogenated Solvents	10,440	(+254)	(-70)	10,624
Organic Liquids	473	0	(-5)	468
Pesticides	2,429	0	0	2,429
PCB's and Dioxins	903	0	0	903
Oily Sludges	1,820	0	(-1)	1,819
Halogenated Organic Sludges and Solids	14	0	0	14
Non-Halogenated Organic Sludges and Solids	1,670		(-7)	1,663
Dye and Paint Sludges and Resins	1,097	0	(-1)	1,096
Metal-Containing Liquids	1,183	0	0	1,183
Cyanide and Metal Liquids	7	0	0	7
Non-Metallic Inorganic Liquids	1,054	(+4)	(-4)	1,054
Metal-Containing Sludges	150	0	0	150
Non-Metallic Inorganic Sludges	1,519	0	0	1,519
Contaminated Soil	2,366	0	0	2,366
Miscellaneous Wastes	3,115	0	(-1)	3,114
<b>TOTAL</b>	<b>65,289</b>	<b>(-28,886)</b>	<b>(-913)</b>	<b>35,490</b>

<sup>1</sup>Minor discrepancies exist between data reflected in this column and in the 1986 manifest summary due to County efforts which identified: (1) firms generating waste in San Mateo County which were erroneously assigned to another county's manifest summary, (2) firms located in another county but erroneously included in the San Mateo County summary, and (3) firms which transported waste under manifest but were not included in the 1986 summary sent to the County.

<sup>2</sup>Explanation for corrections made in this column appear on page 7.2.

<sup>3</sup>Explanation for corrections made in this column appear on page 7.5.

TABLE 7-2

WASTE OIL GENERATION  
BY ROUTE SERVICE HAULERS  
IN SAN MATEO COUNTY  
(1986)

HAULER	AMOUNT OF WASTE OIL (221) SHOWN IN SAN MATEO COUNTY MANIFEST SUMMARY (TONS)	AMOUNT OF WASTE OIL (221) ACTUALLY GENERATED IN SAN MATEO COUNTY (TONS)	PERCENTAGE (%)
California Oil Recyclers	32,019	2,667	(8.3%)
Bayshore Oil Company	1,413	814	(57.6%)
Bay Area Oil Recycling	791	329	(29.0%)
TOTAL	34,223	3,710	(10.8%)

c. Correction for Hazardous Waste Shipped to Transfer Stations for Temporary Storage

In 1986, approximately 913 tons of hazardous waste generated for off-site management were shipped to a "transfer station" in the County for temporary storage before reshipment to a facility for treatment or disposal. Wastes shipped to a transfer station before being shipped onward to a final destination are recorded twice in the State manifest system, and therefore "double counting" occurs. Table 7-1 corrects for the double counting by subtracting out transfer station waste volumes.

d. Adjusted Manifest Data

After adjusting for modified manifest reporting and transfer station storage, approximately 35,490 tons of hazardous waste was transported to off-site facilities in 1986.

e. Generalized Treatment Method for Each Waste Group

Table 7-3 identifies the primary treatment method for each waste group of the 35,490 tons generated for off-site management in 1986.

f. Survey Questionnaire

The State Department of Health Services requires that the plan use the manifest data information when documenting off-site hazardous waste generation. However, to augment or expand upon this information source, staff has prepared a survey questionnaire which has been distributed to approximately 53 known generators of hazardous waste in San Mateo County, including the 20 largest generators identified by the State manifest (greater than 75 tons/year). The survey questionnaire is found in the Appendix.

The response rate among the large quantity generating firms was 14/20 or 70%. The deviation, on average, between waste reported in the survey and that in the manifest was approximately +35%. Explanations include: (a) use of 1987, rather than 1986, data in the survey, (b) reporting net, rather than total, waste generation due to repurchase of recycled wastes, (c) omitting certain wastes from the survey due to a perceived inapplicability, (d) maintaining incomplete records, or (e) incomplete manifest reporting due to "suspense file" data separation.

2. Principal Waste Generating Firms

Manifest information sources indicate that approximately 77 percent of the hazardous waste generated in San Mateo County for off-site treatment and disposal is generated by just 15 firms. This is not uncommon as a very small number of companies are typically responsible for generating the majority of the hazardous waste in an area. Therefore, an understanding of the top generators' needs and operations can facilitate a responsive waste reduction program and an improved forecasting of future waste generation.

TABLE 7-3

GENERALIZED TREATMENT METHOD  
FOR EACH WASTE GROUP  
(1986)

WASTE GROUP	ADJUSTED TOTAL (Tons/Year)	GENERALIZED TREATMENT METHOD (Primary) <sup>1</sup>
Waste Oil	6,416	Oil Recovery
Halogenated Solvents	665	Solvent Recovery
Non-Halogenated Solvents	10,624	Solvent Recovery
Organic Liquids	468	Other Recycling
Pesticides	2,429	Aqueous Treatment-Organic
PCB's and Dioxins	903	Incineration
Oily Sludges	1,819	Oil Recovery
Halogenated Organic Sludges and Solids	14	Incineration
Non-Halogenated Organic Sludges and Solids	1,663	Incineration
Dye and Paint Sludges and Resins	1,096	Incineration
Metal-Containing Liquids	1,183	Aqueous Treatment
Cyanide and Metal Liquids	7	Metals/Neutralization
Non-Metallic Inorganic Liquids	1,054	Aqueous Treatment Metals/Neutralization
Metal-Containing Sludges	150	Stabilization
Non-Metallic Inorganic Sludges	1,519	Stabilization
Contaminated Soil	2,366	Incineration
Miscellaneous Waste		
Expired/Surplus Inorganics (141)	7	Stabilization
Asbestos (151)	411	Stabilization
Metal Dust (172)	389	Other Recycling
FCC Waste (161)	15	Stabilization
Other Inorganic Solid Waste (181)	1,691	Other Recycling
Pharmaceutical Waste (311)	4	Stabilization
Expired/Surplus Organics (331)	2	Other Recycling
Empty Containers (Large) (512)	431	Other Recycling
Empty Containers (Small) (513)	37	Other Recycling
Laboratory Waste (551)	82	Other Recycling
Baghouse Waste (591)	17	Stabilization
Household Waste (612)	28	Other Recycling
<b>TOTAL</b>	<b>35,490</b>	

<sup>1</sup>The figures shown in this table reflect data in Table 7-1. An explanation of the discrepancies between data in this table and the 1986 manifest summary is found on pages 7.2 - 7.5. Determination of Generalized Treatment Method, including Other Recycling, was based solely upon Table E-1 of the State Department of Health Service's Technical Reference Manual of the Guidelines for Preparation of Hazardous Waste Management Plans.

The top 15 waste generators are identified in Table 7-4, with a brief discussion of the type of operation, products produced, and categories of wastes generated, found in the Appendix. According to the manifest system, the County's third largest waste generator in 1986 was California Oil Recyclers. Actually, California Oil Recyclers did not generate the hazardous waste as a result of its industrial operations but rather provided a hauling service which transports waste oil from many businesses in the County. It should be noted that California Oil Recyclers has recently moved its operations from San Mateo County to Newark. However, the departure of the firm from San Mateo County should not affect future waste generation in the County, since these wastes will now be exported to Alameda County.

The relative distribution of the principal hazardous waste generating firms in San Mateo County is shown in Map 7-1. The map includes 20 firms, all of which generated at least 75 tons of hazardous waste for off-site treatment or disposal (1986). All of the firms are located in the eastern bayside portion of the County, and generally within one mile of a major highway.

### 3. Comparison Between 1986 and 1987 Data to Assure Representativeness.

To assure a representative data base, a comparison was made between 1986 and 1987 data for the largest waste generating firms in the County (firms generating at least 500 tons/year (1986)). As can be seen in Table 7-5, waste generation was marginally lower for most of the firms in 1987, and aggregate generation was 14% less. Reduced values in 1987 are known to be attributed to waste reduction efforts for several firms (O'Brien Corporation and Kelly Moore Paint Company), and presumed for others. No conspicuous anomalies are present for the firms sampled. Although the 1987 values are generally lower than those in 1986, the 1986 data is considered a representative base for planning purposes.

### 4. Components of the Waste Stream

#### a. Wastes From Clean-up Activities

Of the 35,490 tons of hazardous waste generated in San Mateo County for off-site management, approximately 4,116 tons (12%) resulted from the clean-up activities associated with known contaminated hazardous waste sites or accidental releases or spills. Clean-up activities are not typically an ongoing means of waste generation, and therefore will be analyzed separately in this plan for purposes of projecting future hazardous waste generation. Table 7-6 also disaggregates clean-up wastes from the current waste stream data.

#### b. Wastes From Small Quantity Generators

There is growing attention and concern for the proper disposal of small amounts of hazardous waste. Generators of small quantities of hazardous waste primarily include commercial businesses and households. Individually, hazardous waste from small quantity generators may not appear significant but, collectively, they represent a critical component of the total waste stream, particularly when such wastes

TABLE 7-4

**PRINCIPAL HAZARDOUS WASTE GENERATING FIRMS  
(1986)**

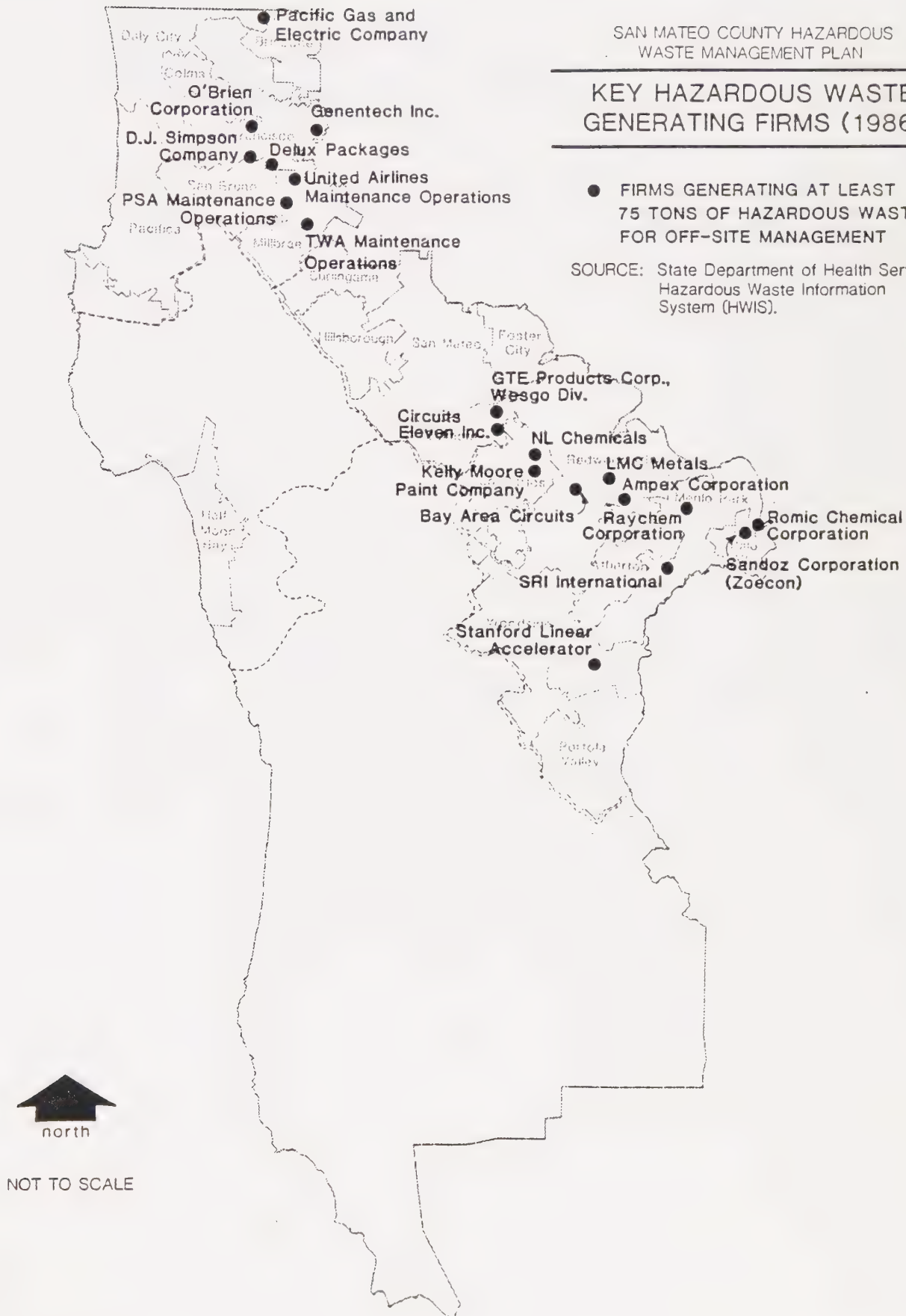
NAME OF FIRM	BUSINESS TYPE	TOTAL OFFSITE WASTE GENERATION (1986) (Tons/Year)
Romic Chemical Corporation, East Palo Alto	Chemical Recycler	10,257.82
United Airlines, San Francisco International Airport	Aircraft Maintenance Center	4,144.91
California Oil Recyclers, San Carlos	Oil Hauler and Recycler	2,616.75
Sandoz Corporation (formerly Zoecon), East Palo Alto	Chemical Research and Manufacturing	2,532.28
LMC Metals, Redwood City	Scrap Metal Recycler	1,551.44
Raychem Corporation, Menlo Park	Plastic and Metal Products Producer	1,199.93
O'Brien Corp., South San Francisco	Paint Manufacturer	971.46
PG & E., Daly City	Materials Facility	880.14
Bayshore Oil Company, Redwood City	Oil Hauler	821.38
Stanford Linear Accelerator, Menlo Park	High Energy Physics Research	799.84
Kelly Moore Paint Company, San Carlos	Paint Manufacturer	660.95
TWA, S.F. International Airport	Aircraft Maintenance Center	302.91
Bay Area Oil Recyclers, Pacifica	Oil Hauler	232.39
Ampex Corporation, Redwood City	Communications Equipment Research and Manufacturing	231.50
NL Chemicals (formerly Spencer Kellogg), San Carlos	Paint/Resin Manufacturer	224.53
<b>TOTAL</b>		<b>27,428.20</b>

SAN MATEO COUNTY HAZARDOUS  
WASTE MANAGEMENT PLAN

**KEY HAZARDOUS WASTE  
GENERATING FIRMS (1986)**

- FIRMS GENERATING AT LEAST  
75 TONS OF HAZARDOUS WASTE  
FOR OFF-SITE MANAGEMENT

SOURCE: State Department of Health Services  
Hazardous Waste Information  
System (HWIS).



NOT TO SCALE



TABLE 7-5

COMPARISON BETWEEN 1986 AND 1987 MANIFEST DATA  
FOR MOST SIGNIFICANT WASTE GENERATING FIRMS<sup>1</sup>

NAME OF FIRM	TOTAL OFF-SITE WASTE GENERATION (1986) (Tons/Year)	TOTAL OFF-SITE WASTE GENERATION (1987) (Tons/Year)
Romic Chemical Corporation	10,258	8,604
United Airlines	4,145	4,027
Sandoz Corporation	2,532	2,001
LMC Metals	1,551	2,305
Raychem Corporation	1,200	1,212
O'Brien Corporation	971	599
PG&E	880	488
Stanford Linear Accelerator	800	285
Kelly Moore Paint Company	661	151
<b>TOTAL</b>	<b>22,998</b>	<b>19,672</b>

<sup>1</sup>Firms generating at least 500 tons/year (1986), excluding "route service haulers."

TABLE 7-6

EXISTING HAZARDOUS WASTE GENERATION/CLEAN-UP ACTIVITIES  
(1986)

WASTE GROUP	AMOUNT FROM CONTAMINATED SITE CLEAN-UP (Tons/Year)
Waste Oil	115
Halogenated Solvents	0
Non-Halogenated Solvents	6
Organic Liquids	44
Pesticides	1
PCB's and Dioxins	903
Oily Sludges	58
Halogenated Organic Sludges and Solids	0
Non-Halogenated Organic Sludges and Solids	59
Dye and Paint Sludges and Resins	17
Metal-Containing Liquids	19
Cyanide and Metal Liquids	0
Non-Metallic Inorganic Liquids	20
Metal-Containing Sludges	0
Non-Metallic Inorganic Sludges	0
Contaminated Soil	2,366
Miscellaneous Wastes	507
<b>TOTAL</b>	<b>4,115</b>

are likely to be disposed of improperly, i.e., in a municipal landfill or sewer. For the purposes of hazardous waste management planning, the State Department of Health Services has defined small quantity generators as firms which generate one ton or less of waste per month.

(1) Commercial/Industrial Sources

Businesses which generate small quantities of hazardous waste include small industrial, commercial and institutional generators such as painters, printing shops, electroplating companies, electronic component manufacturers, gas stations and repair shops. Such firms can generate strong acids, heavy metals, oil and grease, organic solvents, paints and pesticides.

Households generate a variety of hazardous wastes which include motor oil, gasoline, antifreeze, cleaners, paints, solvents, swimming pool chlorine, gardening chemicals and assorted wastes associated with hobbies, e.g., photo chemicals and fabric dyes. An assessment of options for improved management of small quantity generators will be developed as a separate section in the plan.

Quantitative data on hazardous waste generation by small quantity generators is difficult to secure. With respect to small businesses, the County Health Department's inventory and inspection efforts, under its Memorandum of Understanding (M.O.U.) with the State, have identified 995 firms which may be defined as small quantity generators. The Department considers its inventory efforts as 80% complete; therefore, approximately 1,250 such firms are presumed to exist in San Mateo County. Of the 995 firms which have been identified, 250 transported waste under the manifest system and therefore, detailed waste generation data is available.

The County Health Department informs that the remaining 745 identified small quantity generators transported their wastes under the "modified manifest" system, and therefore are not subject to detailed waste reporting requirements. Since the "modified manifest" does not clearly identify individual generators and associated waste tonnages, an alternate approach was employed to derive waste generation data for the remaining 745 firms. For this group of small quantity generators, waste data amounts were deduced according to standardized formulas developed by the U.S. Environmental Protection Agency and supplied by the State Department of Health Services.

The first column of Table 7-7 represents small quantity waste generation by commercial and industrial firms, as derived by this approach. The figures include a 20% upward correction to account for the waste associated with those firms which have not yet been identified and brought into the County generator inspection (M.O.U) program. Approximately 12,345 tons are estimated to have been generated and predominant wastes include waste oil, solvents and miscellaneous wastes.

TABLE 7-7

EXISTING HAZARDOUS WASTE GENERATION/SMALL QUANTITY GENERATORS  
(1986)

WASTE GROUP	AMOUNT FROM COMMERCIAL/ INDUSTRIAL SOURCES <sup>1</sup> (Tons/Year)	AMOUNT FROM HOUSEHOLDS (Tons/Year)
Waste Oil	10,088.6	152.6
Halogenated Solvents	69.8	10.5
Non-Halogenated Solvents	547.5	762.9
Organic Liquids	38	4,146.1
Pesticides	13.5	578.8
PCB's and Dioxins	0.0	0
Oily Sludges	0.0	5.3
Halogenated Organic Sludges and Solids	1.1	0
Non-Halogenated Organic Sludges and Solids	119.5	0
Dye and Paint Sludges and Resins	43.4	21.1
Metal-Containing Liquids	34.7	15.8
Cyanide and Metal Liquids	4.5	0
Non-Metallic Inorganic Liquids	98.1	368.3
Metal-Containing Sludges	24.4	21.1
Non-Metallic Inorganic Sludges	0.0	5.3
Contaminated Soil	0.0	0
Miscellaneous Wastes	1,262.2	257.3
<b>TOTAL</b>	<b>12,345.3</b>	<b>6,345.1</b>

<sup>1</sup>Data for this column was derived in part from the 1986 State Department of Health Services manifest summary and the "No Survey Method" described in the Technical Reference Manual for the preparation of Hazardous Waste Management Plans. More specifically, the County Health Department's inventory and inspection efforts, under its Memorandum of Understanding (M.O.U.) with the State, have identified 995 firms which may be defined as small quantity generators. The Department considers its inventory efforts as 80% complete; therefore, approximately 1,250 such firms are presumed to exist in San Mateo County.

Of the 995 firms known to exist in the County, 250 transported waste under a manifest, and therefore waste generation data for these firms is available. For the remaining 745 small quantity generators, the County Health Department indicates that these firms transported their wastes under the "modified manifest" procedure (route haulers), and therefore, specific waste generation data is not available. For this group, the "No Survey Method" was used. The figures include a 20% upward correction to account for the waste associated with those firms which have not yet been identified and brought into the County generator inspection (M.O.U.) program.

## (2) Household Sources

With respect to household hazardous waste, approximately 6,345 tons of household hazardous waste are estimated to have been generated in 1986, as indicated in the second column of Table 7-7. This data was derived from the results of a County-sponsored household hazardous waste collection program, and validated through reference to accepted standards furnished by the U.S. Environmental Protection Agency (EPA) and the State Waste Management Board.

In April 1986, the County sponsored a household hazardous waste collection event. Over 450 households participated, which reflects approximately 0.19% of the total County population. Assuming that the waste collected represents approximately one year's home storage, the data from 450 households was used as a basis for projecting total annual household waste generation or 6,345 tons.

Applying 6,345 tons as a planning estimate was validated through review of accepted standards on household hazardous waste generation. The State Waste Management Board estimates that household hazardous waste constitutes approximately 0.45-1.0% of the solid waste stream, which, in San Mateo County, equates to 3,644-8,097 tons. The EPA estimates that a typical household generates 3-8 gallons of liquid and 1-5 pounds of solid hazardous waste each year. In San Mateo County, this equates to 3,101-8,547 tons. The 6,345 tons derived from the County collection event falls squarely within these planning ranges.

## 5. Consolidation of Existing Hazardous Waste Generation Data

For a more comprehensive representation of the County's hazardous waste stream, Table 7-8 consolidates previously discussed data into two basic categories: commercial/industrial hazardous waste and household hazardous waste. This table will assist in projecting future hazardous waste generation and need for future off-site management capacity.

## 6. Hazardous Waste Exported from San Mateo County

Of the 35,490 tons of hazardous waste generated in San Mateo County for off-site management, approximately 28,761 tons were exported to facilities elsewhere in California or out of state. An analysis of exported hazardous waste by waste group is shown in Table 7-9. In the aggregate, approximately 81-83% of the hazardous waste generated in San Mateo County was exported.

## 7. Hazardous Waste Generated and Managed Within San Mateo County

Of the 35,490 tons of hazardous waste generated in San Mateo County for off-site management, approximately 5,893 tons remained in the County for treatment or disposal. As evidenced in Table 7-10, 3,528 tons or 60% of these wastes are waste oil, 1,210 tons or 20% are solvents. This results from the fact that in 1986 there were three facilities for treatment or

TABLE 7-8

TOTAL EXISTING GENERATION - MANAGED OFF-SITE  
(1986)

WASTE GROUP	Amount From Manifest Data Sources <sup>1</sup> (Tons/Year)	Amount From Contaminated Site Clean-up (Tons/Year)	Sub-Total Amount Column 1- Columns 2 and 3 (Tons/Year)	Adjusted Amount From Commercial/Indus- trial Small Quan- tity Generators <sup>2</sup> (Tons/Year)	Amount From Variance Exempted Wastes <sup>3</sup> (Tons/Year)	Total Amount From Commercial/ Industrial Generators (Tons/Year)	Total Amount From Household Generators (Tons/Year)
Waste Oil	6,416	115	6,301	2,018	0	8,319	153
Halogenated Solvents	665	0	665	14	0	679	11
Non-Halogenated Solvents	10,624	6	10,618	109	0	10,727	763
Organic Liquids	468	44	424	8	0	432	4,146
Pesticides	2,429	1	2,428	3	0	2,431	579
PCB's and Dioxins	903	903	0	0	0	0	0
Oily Sludges	1,819	58	1,761	0	0	1,761	5
Halogenated Organic Sludges and Solids	14	0	14	0	0	14	0
Non-Halogenated Organic Sludges and Solids	1,663	59	1,604	24	0	1,628	0
Dye and Paint Sludges and Resins	1,096	17	1,079	9	0	1,088	21
Metal-Containing Liquids	1,183	19	1,164	7	0	1,171	16
Cyanide and Metal Liquids	7	0	7	1	0	8	0
Non-Metallic Inorganic Liquids	1,054	20	1,034	20	0	1,054	368
Metal-Containing Sludges	150	0	150	5	0	155	21
Non-Metallic Inorganic Sludges	1,519	0	1,519	0	0	1,519	5
Contaminated Soil	2,366	2,366	0	0	0	0	0
Miscellaneous Wastes	3,114	507	2,607	252	0	2,859	257
<b>TOTAL</b>	<b>35,490</b>					<b>33,845</b>	<b>6,345</b>

<sup>1</sup>Waste tonnage after correcting for modified manifest reporting procedure (route service haulers) and transfer station storage. (See Table 7-1).

<sup>2</sup>To avoid double counting, this column represents firms which have yet to be identified and included in the County generator inspection (M.O.U.) program, i.e., 20% of overall small quantity waste generation. The balance (80%) is included in column 1 as manifested waste.

<sup>3</sup>A class of wastes that are exempt from State manifest and disposal requirements, e.g., refinery wastes, cement kiln dust, geothermal wastes.

TABLE 7-8 (Continued)

**TOTAL EXISTING GENERATION-MANAGED OFF-SITE  
(1986)**

MISCELLANEOUS WASTE GROUP	INDUSTRIAL COMMERCIAL GENERATORS (Tons/Year)	HOUSEHOLD GENERATORS (Tons/Year)
Expired/Surplus Inorganics (141)	7	0
Metal Dust (172)	426	0
FCC Waste (161)	16	0
Other Inorganic Solid Waste (181)	1,854	0
Pharmaceutical Waste (311)	4	0
Expired/Surplus Organics (331)	2	0
Empty Containers (Large) (512)	413	0
Empty Containers (Small) (513)	34	0
Laboratory Waste (551)	85	0
Baghouse Waste (591)	18	0
Household Waste (612)	0	257
<b>TOTAL</b>	<b>2,859</b>	<b>257</b>

TABLE 7-9

HAZARDOUS WASTE EXPORTED FROM SAN MATEO COUNTY  
(1986)

WASTE GROUP	QUANTITY EXPORTED (TONS/YEAR)
Waste Oil	3,252 <sup>1</sup>
Halogenated Solvents	571
Non-Halogenated Solvents	9,183
Organic Liquids	362
Non-Halogenated Organic Sludges and Solids	1,070
Pesticides	2,428
PCB's and Dioxins	807
Oily Sludges	1,777
Halogenated Organic Sludges and Solids	14
Dye and Paint	805
Sludges and Resins	
Metal-Containing Liquids	1,076
Cyanide and Metal Liquids	7
Non-Metallic Inorganic Liquids	1,027
Metal-Containing Sludges	11
Non-Metallic Inorganic Sludges	1,519
Contaminated Soil	2,007
Miscellaneous Wastes	2,845
<b>TOTAL</b>	<b>28,761</b>

<sup>1</sup>The 1986 Department of Health Services manifest summary indicates that approximately 7,170 tons of waste oil was exported from San Mateo County. Subsequent County efforts determined that of this amount approximately 3,918 tons were not generated in the County but rather were imported into the County by a route hauler (California Oil Recyclers) under the "modified manifest" procedure, and then exported from the County during the same year. Since this quantity is not attributed to San Mateo County waste generation, it would be erroneous to reflect it as exported waste. Therefore, the base 7,170 tons is adjusted to 3,252 tons.

TABLE 7-10

HAZARDOUS WASTE GENERATED AND MANAGED  
WITHIN SAN MATEO COUNTY  
(1986)

	QUANTITY GENERATED, TRANSPORTED, AND MANAGED WITHIN SAN MATEO COUNTY (TONS/YEAR)
Waste Oil	3,528
Halogenated Solvents	63
Non-Halogenated Solvents	1,147
Organic Liquids	61
Pesticides	0
PCB's and Dioxins	101
Oily Sludges	0.5
Halogenated Organic Sludges and Solids	0
Non-Halogenated Organic Sludges and Solids	583
Dye and Paint	293
Sludges and Resins	
Metal-Containing Liquids	0
Cyanide and Metal Liquids	0
Non-Metallic Inorganic Liquids	4
Metal-Containing Sludges	0
Non-Metallic Inorganic Sludges	0
Contaminated Soil	0
Miscellaneous Wastes	113
<b>TOTAL</b>	<b>5,893.5</b>

disposal of hazardous waste within San Mateo County: They are: (1) California Oil Recyclers, (2) Romic Chemical Company (specializing in solvents), and (3) BFI of San Mateo County. An expanded analysis of the operations for these firms is the subject of a companion section on management capacity.

#### 8. Hazardous Waste Imported Into and Managed Within San Mateo County

In 1986, approximately 58,964 tons of hazardous waste were imported into San Mateo County from the majority of counties in California, as well as from outside the State. An analysis of hazardous waste by waste group is reflected in Table 7-11, which indicates that approximately 63% of the wastes imported into San Mateo County for treatment are waste oil, followed by solvents (31%).

#### COUNTYWIDE GENERATION/MANAGED ON SITE

Many companies, particularly manufacturers, manage their hazardous waste on site, i.e., at the facility in which it is generated. The predominant "on-site" generators operate under a permit from the State Department of Health Services as a treatment and storage facility.

There are six permitted on-site treatment facilities operating in the County, each of which will be examined in detail in a subsequent section of the plan which analyzes available capacity. The firms include Raychem, the O'Brien Corporation, Sandoz (Zoecon) and the Stanford Linear Accelerator, which were identified as among the top 15 generators in the County. In the aggregate, 112,588 tons (1986) of hazardous waste were generated and managed on site in San Mateo County by facilities under State Department of Health Services permit or similar authorization.

Numerous other companies generate and manage hazardous waste on site. However, they do not require a permit from the State Department of Health Services and therefore detailed waste generation data is not readily available. For example, firms with on-site recycling operations are exempt from permit requirements while others, which treat small volumes of waste or waste of low toxicity, operate under a variance from the State permitting requirements. A typical facility receiving such a variance is one which neutralizes hazardous waste in a tank and discharges the resultant solution into the sewer.

In order to better represent on-site waste generation, a survey questionnaire was prepared and distributed to: (1) the 20 largest waste generators in the County (greater than 75 tons/year as identified by the State manifest), (2) each permitted on-site treatment (or storage facility) in the County (one additional firm), (3) all firms with on-site treatment capacity operating under a variance from the State Department of Health Services (five additional firms), and (4) all firms with sewage pretreatment operations, as identified by the local sewer authorities (27 additional firms). The survey questionnaire, which includes questions regarding existing and future on-site treatment capacity, is included in the Appendix.

TABLE 7-11

HAZARDOUS WASTE IMPORTED INTO AND MANAGED  
WITHIN SAN MATEO COUNTY  
(1986)

WASTE GROUP	QUANTITY RECEIVED (TONS/YEAR)
Waste Oil	37,379.0 <sup>1</sup>
Halogenated Solvents	3,550.0
Non-Halogenated Solvents	15,015.6
Organic Liquids	449.0
Pesticides	27.0
PCB's and Dioxins	1,542.3
Oily Sludges	26.0
Halogenated Organic Sludges and Solids	79.0
Non-Halogenated Organic Sludges and Solids	565.0
Dye and Paint Sludges, and Resins	191.0
Metal-Containing Liquids	12.0
Cyanide and Metal Liquids	0.1
Non-Metallic Inorganic Liquids	113.0
Metal-Containing Sludges	3.5
Non-Metallic Inorganic Sludges	1.0
Contaminated Soil	0.8
Miscellaneous Wastes	158.0
<b>TOTAL</b>	<b>58,964.3</b>

<sup>1</sup>The 1986 Department of Health Services manifest summary indicates that approximately 6,866 tons of waste oil was imported into San Mateo County. Subsequent County efforts determined that in addition to this amount 30,513 was imported into San Mateo County by route service haulers under the modified manifest procedure. Since this waste was actually imported into the County, the base 6,866 tons is adjusted to 37,379 tons.

Of the 53 survey questionnaires distributed, 36 were completed and returned, representing a 68% response rate. In addition to the 6 permitted on-site facilities, 10 firms indicated that they also treat waste on-site using a process other than "closed loop" or in-process recycling. In the aggregate, 12,550 tons (1986) were generated and treated on-site by these firms. Therefore, total known hazardous waste generation associated with firms treating waste on-site in 1986 was 125,138 tons.

## **COUNTYWIDE GENERATION/STANDARD INDUSTRIAL CLASSIFICATION**

With a more refined understanding of the County waste stream, the next table evaluates the total amount of hazardous waste according to the industry or commercial group which generates the waste. By categorizing waste data into industrial or commercial groups, one can better identify those sectors on which the County should concentrate its waste reduction efforts as well as project future changes in waste generation based upon shifts in the local economy. To determine the appropriate industry or commercial group, available data was divided into SIC (Standard Industrial Classification) code numbers. The SIC system was developed and is used by the federal government to classify commercial and industrial operations for census purposes.

### **1. Wastes Managed Off Site**

An SIC number was assigned to approximately 1,062 firms known to generate hazardous waste in San Mateo County. Specific waste generation tonnage figures were available for 317 firms under manifest, while tonnage data for the remaining 745 firms (small quantity generators) was estimated according to the standardized formulas supplied by the Department of Health Services for business groups. Resultant waste generation data is reflected in Table 7-12, which identifies chemical and allied products, air transport, electrical and electronic machinery, and automotive repair as the top waste generating industries.

### **2. Waste Managed On Site**

A SIC number was assigned to the six permitted on-site treatment facilities and the 10 firms with on-site operations, as identified by the survey. Approximately 86% of these wastes resulted from firms engaged in electronic manufacturing industries. Table 7-13 reflects the resultant waste generation data.

TABLE 7-12

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE<sup>1</sup>  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-07	SIC-15	SIC-16	SIC-17	SIC-20	SIC-24	SIC-25
Waste Oil						2.81	29.8
Halogenated Solvents		0.01	0.01	0.02		0.01	
Non-Halogenated Solvents		0.09	0.21	13.22	0.02	0.43	8.53
Organic Liquids		17.92					
Pesticides	0.32				0.01		
PCB's and Dioxins							
Oily Sludges		5.92			51.28		
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids				6.83		0.02	
Dye and Paint Sludges and Resins		0.03	0.02	8.91	0.02	0.27	
Metal-Containing Liquids					1.43		
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids		0.01	0.06	0.04	0.01		
Metal-Containing Sludges			0.02	0.01			
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.18	0.04	1.82	0.97	0.13	0.04	
<b>TOTAL</b>	<b>0.50</b>	<b>24.02</b>	<b>2.14</b>	<b>30.00</b>	<b>52.90</b>	<b>3.58</b>	<b>38.33</b>

SIC-07: Agricultural services

SIC-17: Specialized contractors

SIC-25: Furniture and fixtures

SIC-15: Building construction

SIC-20: Food production

SIC-16: Non-building construction

SIC-24: Lumber and wood products

<sup>1</sup>There exists a 4.6% discrepancy between total waste generation reflected in this table and that shown in Table 7-8 (32,266 tons and 33,845 tons, respectively). This deviation is based upon multiple "rounding off" decisions necessitated by the "No Survey Method," and the inability to assign a SIC code to wastes exported from the County by "route service haulers."

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-26	SIC-27	SIC-28	SIC-29	SIC-30	SIC-31	SIC-32
Waste Oil		18.12	41.73	2,923.79	5.34		
Halogenated Solvents	4.88	16.40	17.76	0.03	0.61		
Non-Halogenated Solvents	11.05	80.95	9,816.14	2.09	88.81		0.04
Organic Liquids			49.79				
Pesticides			2,426.75				
PCB's and Dioxins							
Oily Sludges		5.34	1,486.38	40.92			
Halogenated Organic Sludges/Solids			12.90				
Non-Halogenated Organic Sludges and Solids	0.01		18.42	574.71	0.01	703.49	
Dye and Paint Sludges and Resins		30.30	649.30	0.01			2.08
Metal-Containing Liquids		0.05	6.10	0.05	0.12		0.01
Cyanide and Metal Liquids		0.01		0.01			
Non-Metallic Inorganic Liquids	8.61	4.07	37.91	0.41			0.01
Metal-Containing Sludges		0.01	0.03				
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.01	52.75	91.54	125.55	0.02		0.10
<b>TOTAL</b>	<b>24.56</b>	<b>208.00</b>	<b>14,654.75</b>	<b>3,667.57</b>	<b>94.91</b>	<b>703.49</b>	<b>2.24</b>

SIC-26: Paper products

SIC-27: Printing and publishing

SIC-28: Chemical and allied products

SIC-29: Petroleum related industries

SIC-30: Rubber and plastics products

SIC-31: Leather products

SIC-32: Stone, clay, glass, concrete products

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-33	SIC-34	SIC-35	SIC-36	SIC-37	SIC-38	SIC-39
Waste Oil		37.01	88.99	49.67	15.76	10.04	105.93
Halogenated Solvents		7.89	4.27	104.39	0.50	1.21	0.06
Non-Halogenated Solvents	3.71	20.92	8.78	151.91	1.60	4.30	4.61
Organic Liquids		15.22		236.58	2.15		
Pesticides							
PCB's and Dioxins							
Oily Sludges		11.47		124.62	4.36	0.15	
Halogenated Organic Sludges/Solids		0.54	0.28				
Non-Halogenated Organic Sludges and Solids		4.01	20.32	154.89	0.02	0.05	0.03
Dye and Paint Sludges and Resins		1.51	0.24	74.55	0.25	0.32	0.30
Metal-Containing Liquids		5.35	3.92	417.21	5.76	0.14	0.13
Cyanide and Metal Liquids		1.97	0.32	5.15	0.02	0.05	0.02
Non-Metallic Inorganic Liquids	5.21	3.24	2.59	891.67	0.36	0.51	0.19
Metal-Containing Sludges		3.10	0.60	128.10	0.07	0.09	0.04
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	1,551.44	5.42	0.13	78.70	13.28	0.77	0.02
<b>TOTAL</b>	<b>1,560.36</b>	<b>117.65</b>	<b>130.44</b>	<b>2,417.44</b>	<b>44.13</b>	<b>17.63</b>	<b>111.33</b>

SIC-33: Primary metal industries  
 SIC-34: Fabricated metal products  
 SIC-35: Machinery (except electrical)  
 SIC-36: Electrical and electronic machinery

SIC-37: Transportation equipment  
 SIC-38: Measuring instruments  
 (including medical, photographic, optical)

SIC-39: Miscellaneous manufacturing

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE  
1986

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-41	SIC-42	SIC-43	SIC-44	SIC-45	SIC-48	SIC-49
Waste Oil		169.22			1,745.33		42.32
Halogenated Solvents		0.03		0.01	148.04	0.01	303.92
Non-Halogenated Solvents	4.75	0.52	0.05	0.10	68.48	0.20	3.77
Organic Liquids		13.03			16.68	11.96	
Pesticides							
PCB's and Dioxins							
Oily Sludges				10.43	12.07	2.46	2.65
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids	55.11			3.98	20.06		1.66
Dye and Paint Sludges and Resins	0.01	0.05	0.01		288.06		0.12
Metal-Containing Liquids					250.02	5.73	2.63
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids	0.02	0.16	0.02	0.01	0.02	16.69	6.87
Metal-Containing Sludges	0.01	0.05	0.01		0.01		
Non-Metallic Inorganic Sludges					1,519.31		
Contaminated Soil							
Miscellaneous Wastes	0.46	4.56	0.46	0.01	503.79	9.39	66.31
<b>TOTAL</b>	<b>60.36</b>	<b>187.62</b>	<b>0.55</b>	<b>14.54</b>	<b>4,571.87</b>	<b>46.44</b>	<b>430.25</b>

SIC-41: Public transit  
 SIC-42: Motor freight and warehousing  
 SIC-43: U.S. Government (motor freight)

SIC-44: Water transportation  
 SIC-45: Air transport  
 SIC-48: Communication

SIC-49: Electric, gas, and  
 sanitary services

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS  
MANAGED OFF-SITE  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-50	SIC-51	SIC-52	SIC-53	SIC-54	SIC-55	SIC-57
Waste Oil						395.95	
Halogenated Solvents	0.08	0.09	0.01			0.44	
Non-Halogenated Solvents	0.89	1.43	0.12	1.73	0.05	30.45	0.05
Organic Liquids							
Pesticides	0.14	0.09	0.05	0.39	0.39		0.39
PCB's and Dioxins							
Oily Sludges						7.91	
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids		0.06				6.50	
Dye and Paint Sludges and Resins	0.25	0.17	0.08	0.03	0.03	0.70	0.03
Metal-Containing Liquids		0.14					
Cyanide and Metal Liquids		0.03					
Non-Metallic Inorganic Liquids	0.63	0.71	0.07	0.03	0.03	2.09	0.03
Metal-Containing Sludges	0.01					0.70	
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	2.87	1.41	0.64	0.26	0.26	100.18	0.26
<b>TOTAL</b>	<b>4.87</b>	<b>4.13</b>	<b>0.97</b>	<b>2.44</b>	<b>0.76</b>	<b>544.92</b>	<b>0.76</b>

SIC-50: Wholesale trade (durable goods)  
SIC-51: Wholesale trade (non-durable goods)  
SIC-52: Building materials, hardware, and garden supply (retail)

SIC-53: General merchandise stores  
SIC-54: Food stores  
SIC-55: Auto dealers and service stations  
SIC-57: Furniture and home furnishing stores

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						
	SIC-59	SIC-62	SIC-63	SIC-65	SIC-72	SIC-73	SIC-75
Waste Oil						210.37	1,103.72
Halogenated Solvents				0.01	8.55	3.66	1.02
Non-Halogenated Solvents	0.02			0.10		11.85	113.27
Organic Liquids		3.13				19.57	34.75
Pesticides	0.01						
PCB's and Dioxins							
Oily Sludges						3.32	19.26
Halogenated Organic Sludges/Solids							0.41
Non-Halogenated Organic Sludges and Solids					44.11	16.85	
Dye and Paint Sludges and Resins	0.02			0.01		0.11	29.32
Metal-Containing Liquids						519.61	
Cyanide and Metal Liquids						0.58	
Non-Metallic Inorganic Liquids	0.01			0.03		79.63	4.81
Metal-Containing Sludges				0.01		0.05	1.60
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.13		0.23	0.91	0.23	70.19	152.59
<b>TOTAL</b>	<b>0.19</b>	<b>3.13</b>	<b>0.23</b>	<b>1.07</b>	<b>52.89</b>	<b>935.79</b>	<b>1,460.75</b>

SIC-59: Miscellaneous retail  
 SIC-62: Investment brokers  
 SIC-63: Insurance providers

SIC-65: Real estate offices  
 SIC-72: Cleaning and domestic services  
 SIC-73: Business services

SIC-75: Automotive repairs,  
 service stations,  
 garages

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS  
(1986)

INDUSTRY GROUP (SIC CODE-TONS/YEAR)							
WASTE GROUP	SIC-76	SIC-79	SIC-80	SIC-82	SIC-89	SIC-91	SIC-92
Waste Oil							1.56
Halogenated Solvents	0.11	0.01			0.03		
Non-Halogenated Solvents	3.14	0.10	1.00	1.30	0.41	0.13	0.56
Organic Liquids						5.21	
Pesticides		0.43					0.09
PCB's and Dioxins							
Oily Sludges							0.94
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids	0.08						
Dye and Paint Sludges and Resins	1.42			0.01			
Metal-Containing Liquids			0.28	0.01			
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids	0.29	0.01	0.03	0.02	0.01		
Metal-Containing Sludges	0.09						
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	8.36	0.16	0.90	1.00	0.01	0.76	0.34
<b>TOTAL</b>	<b>13.49</b>	<b>0.71</b>	<b>2.21</b>	<b>2.34</b>	<b>0.46</b>	<b>6.10</b>	<b>3.49</b>

SIC-76: Miscellaneous repair services  
 SIC-79: Amusement and recreation services  
 SIC-80: Health services  
 SIC-82: Education services

SIC-89: Miscellaneous services  
 SIC-91: General government and public administration

SIC-92: Justice, public order, and safety administration

TABLE 7-12 (Continued)

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE  
(1986)

WASTE GROUP	<u>INDUSTRY GROUP (SIC CODE-TONS/YEAR)</u>	
	SIC-95	SIC-99
Waste Oil		
Halogenated Solvents		2.68
Non-Halogenated Solvents		
Organic Liquids		2.86
Pesticides	1.43	
PCB's and Dioxins		
Oily Sludges		
Halogenated Organic Sludges/Solids		
Non-Halogenated Organic Sludges and Solids		
Dye and Paint Sludges and Resins		
Metal-Containing Liquids		
Cyanide and Metal Liquids		
Non-Metallic Inorganic Liquids		
Metal-Containing Sludges		
Non-Metallic Inorganic Sludges		
Contaminated Soil		
Miscellaneous Wastes		
<b>TOTAL</b>	<b>1.43</b>	<b>5.54</b>

SIC-95: Administration of environmental quality programs  
SIC-99: Non-classifiable establishments

TABLE 7-13

EXISTING GENERATION - PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED ON-SITE  
(1986)

WASTE GROUP	INDUSTRY GROUP (SIC CODE-TONS/YEAR)						TOTAL <sup>1</sup>
	SIC-20	SIC-28	SIC-34	SIC-36	SIC-45	SIC-73	
Waste Oil							
Halogenated Solvents							
Non-Halogenated Solvents		17					17
Organic Liquids	641						641
Pesticides							
PCB's and Dioxins							
Oily Sludges							
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids							
Dye and Paint Sludges and Resins							
Metal-Containing Liquids			5,279	91,438	256	16,773	113,746
Cyanide and Metal Liquids				6,340			6,340
Non-Metallic Inorganic Liquids		3,176		1,218			4,394
Metal-Containing Sludges							
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes							
<b>TOTAL</b>	<b>641</b>	<b>3,193</b>	<b>5,279</b>	<b>98,996</b>	<b>256</b>	<b>16,773</b>	<b>125,138</b>

SIC-20: Food and beverage production

SIC-28: Chemical and allied products

SIC-34: Fabricated metal products

SIC-36: Electrical and electronic machinery

SIC-45: Air transport

SIC-73: Business services

<sup>1</sup>Total waste generation shown in this table (125,138 tons) is discussed on pages 7.19 and 7.21, and incorporates data from Table 7-16 (112,588 tons) and Table 7-18 (12,550 tons).



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Management Capacity



## EXISTING HAZARDOUS WASTE MANAGEMENT CAPACITY

Hazardous waste may be managed at either an "on-site" or "off-site" treatment, storage, or disposal facility. An on-site facility consists of a business or operation which manages its own waste, whereas an off-site facility receives waste from other waste generating firms. Off-site facilities tend to be commercial operations.

A primary emphasis of the Hazardous Waste Management Plan will be to assure that sufficient off-site facility capacity is available proportionate to the County's waste generation needs. The availability of on-site facility capacity is also important, and will be considered in the plan. Although hazardous waste managed on-site does not pose an immediate planning problem, should existing on-site facilities lose their operating privileges, such waste would require treatment or disposal at an off-site facility. Also, should excess capacity be available at on-site facilities, such facilities could consider converting to an off-site operation.

### OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES

In 1986, there were three commercial off-site facilities in San Mateo County. They are: (a) California Oil Recyclers, (b) Romic Chemical Corporation, and (c) BFI of San Mateo County.

#### 1. Treatment/Disposal Capacity

##### a. California Oil Recyclers

California Oil Recyclers terminated its operations as a commercial oil recycler in September 1987, and recently relocated to Newark in Alameda County. While located in San Mateo County, the firm served as both a hauler and reprocessor of used lubricating oil, recycling it into usable petroleum products, fuel oil, and asphalt flux.

Data furnished by the State Department of Health Services indicates that in 1986 California Oil Recyclers operated at 98% of its full treatment capacity (25,200 tons), as shown in Table 7-14.

##### b. Romic Chemical Corporation

Romic Chemical Corporation, located in East Palo Alto, serves as a major chemical recycler for businesses using solvents and other organic compounds, including alcohols, acetates, and fluorocarbons. The firm remains as the only commercial off-site hazardous waste management facility in San Mateo County. The location of Romic Chemical Corporation within the County is shown on Map 7-2.

Data furnished by the Romic Chemical Corporation indicates that the facility in 1986 operated at approximately 35%-37% of their full treatment capacity (58,800 tons), as shown in Table 7-14.

TABLE 7-14

EXISTING COMMERCIAL OFF-SITE TREATMENT/DISPOSAL CAPACITY/  
 QUANTITIES OF WASTE TREATED OR DISPOSED  
 (PERMITTED FACILITIES)  
 (1986)

FACILITY <sup>1</sup>	GENERALIZED TREATMENT METHOD	FACILITY CAPACITY (Tons/Year)	QUANTITY OF WASTE TREATED OR DISPOSED (Tons/Year)	PERCENTAGE OF CAPACITY USED
California Oil Recyclers <sup>2</sup>	Oil Recovery	25,200	24,813	98%
Romic Chemical Corporation	Aqueous Treatment-- Organic	8,400	2,940	35%
	Solvent Recovery	50,400	18,480	37%
BFI of San Mateo County <sup>3</sup>	Residuals Disposal	N/A	304	N/A
<b>TOTAL</b>		<b>84,000</b>	<b>46,537</b>	<b>55%</b>

<sup>1</sup>Quicksilver Products, Inc., an existing mercury recovery operation with facility permit approval pending, maintains 1.13 tons/year treatment capacity.

<sup>2</sup>Terminated Operations in 1987.

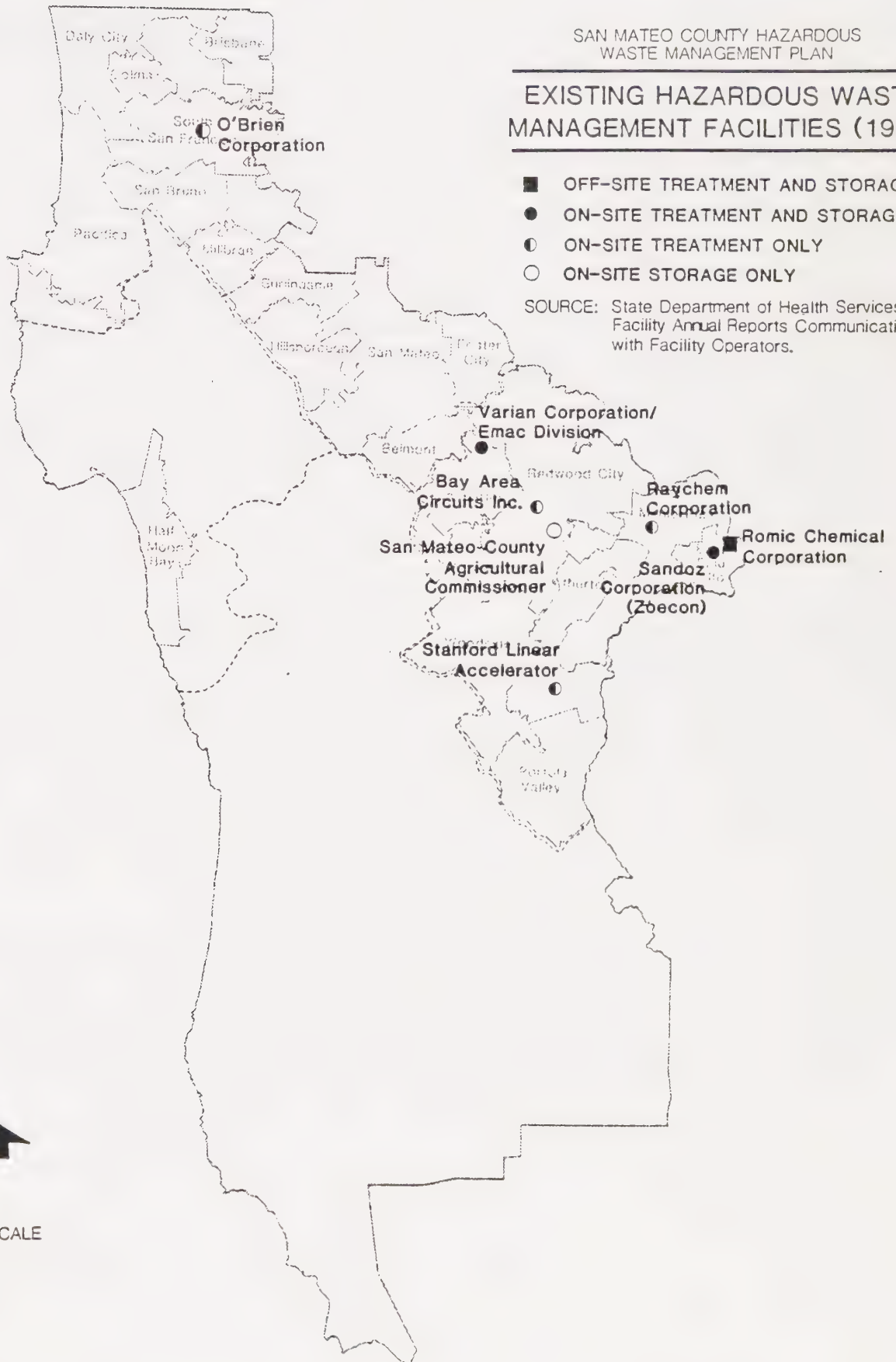
<sup>3</sup>Ceased accepting hazardous waste in 1987.

SAN MATEO COUNTY HAZARDOUS  
WASTE MANAGEMENT PLAN

**EXISTING HAZARDOUS WASTE  
MANAGEMENT FACILITIES (1988)**

- OFF-SITE TREATMENT AND STORAGE
- ON-SITE TREATMENT AND STORAGE
- ◐ ON-SITE TREATMENT ONLY
- ON-SITE STORAGE ONLY

SOURCE: State Department of Health Services -  
Facility Annual Reports Communication  
with Facility Operators.



NOT TO SCALE

Apr. 1988/rd



c. BFI of San Mateo County

BFI of San Mateo County operates the Ox Mountain municipal landfill near Half Moon Bay, which accepted asbestos for disposal in 1986. The facility ceased accepting asbestos in 1987, and does not plan to reaccept the waste in the future. Data furnished by the State Department of Health Services indicates that in 1986 the facility disposed approximately 304 tons (1,216 cubic yards) of asbestos, as shown in Table 7-14.

d. Quicksilver Products, Inc.

Quicksilver Products, Inc. operates an off-site storage, treatment and recycling facility in Brisbane. The firm currently recycles materials containing mercury, particularly those derived from laboratory instruments. In 1986, the firm applied for a facility permit from the State Department of Health Services, which is currently pending approval. Communication with the State Department of Health Services indicates that the firm has requested an annual treatment capacity of 1.13 tons (20 gallons). As facility permit approval is pending, this statistic is not formally included in Table 7-14.

2. Storage Capacity

Each of the three facilities operating in 1986 provided capacity for long-term storage of hazardous waste. Storage is usually necessary to consolidate wastes in advance of treatment or disposal, or before shipping untreatable or residual wastes to another off-site management facility. Available storage capacity can be used to mitigate the effect of temporary closure of an off-site treatment or disposal facility, or provide an interim solution during a hazardous waste emergency or crisis. Table 7-15 reflects hazardous storage capacity in 1986, as derived from State Department of Health Services data, and communication with facility operators.

**ON-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES**

1. Facilities Operating Under Permit From State Department of Health Services

Many companies, particularly manufacturers, manage their hazardous waste on-site, i.e., at the facility in which it is generated. The predominant "on-site" generators operate under a permit from the State Department of Health Services as a treatment, storage, or disposal facility. Within San Mateo County, there are nine firms (1986) permitted as on-site treatment, storage, or disposal facilities, as follows:

- a. Raychem Corporation, Menlo Park
- b. The O'Brien Corporation, South San Francisco
- c. Stanford Linear Accelerator, Menlo Park
- d. Varian Corporation, San Carlos

TABLE 7-15

EXISTING COMMERCIAL OFF-SITE STORAGE CAPACITY  
(1986)

FACILITY	STORAGE METHOD	AVERAGE MONTHLY QUANTITY OF WASTES STORED OVER 90 DAYS (Tons)	STORAGE CAPACITY (Tons)	PERCENTAGE OF STORAGE CAPACITY USED
California Oil Recyclers <sup>1</sup>	Tank (S02)	1,008	1,281	79%
Romic Chemical Corporation <sup>2</sup>	Container (S01)	10.5	620	2%
	Tank (S02)	210	452	46%
TOTAL		1,229	2,353	52%

<sup>1</sup>Data based upon information supplied by the State Department of Health Services. The firm terminated operations in 1987, and has relocated to Alameda County.

<sup>2</sup>Data based upon information supplied by Romic Chemical Corporation. No information was received from the State Department of Health Services.

- e. Bay Area Circuits, Inc., Redwood City
- f. Sandoz Corporation (Zoecon), East Palo Alto
- g. Rohm and Haas (Duolite), Redwood City
- h. Poetsch and Peterson, South San Francisco
- i. San Mateo County Agricultural Commissioner, Redwood City

The relative location of each permitted on-site facility is shown on Map 7-2. In the aggregate, these firms treated 112,588 tons of hazardous waste, amounting to 24.5% of total treatment capacity. Table 7-16 indicates current treatment volume and treatment capacity for each firm. Five of the facilities are permitted to store hazardous waste in excess of 90 days. In the aggregate, these firms stored 3,445 tons of hazardous waste, amounting to 64% of total storage capacity. Table 7-17 indicates current storage volume and capacity for each firm.

## 2. Firms With On-Site Treatment Operations And Do Not Require a State Department of Health Services Permit

Numerous other companies generate and manage hazardous waste on-site. However, they do not require a permit from the State Department of Health Services and, therefore, detailed waste generation data is not readily available. For example, firms with on-site recycling operations are exempt from permit requirements while others, which treat small volumes of waste or waste of low toxicity operate under a variance from the State permitting requirements. A typical facility receiving such a variance is one which neutralizes hazardous waste in a tank and discharges the resultant solution into the sewer.

In order to better represent on-site waste treatment capacity, a survey questionnaire was prepared and distributed to: (1) the 20 largest waste generators in the County (greater than 75 tons/year) as identified by the State manifest, (2) each permitted on-site treatment facility in the County (1 additional firm), (3) all firms with on-site treatment capacity known to be operating under a variance from the State Department of Health Services (5 additional firms), and (4) all firms with sewage pre-treatment operations, as identified by the local sewer authorities (27 additional firms). The survey questionnaire includes questions regarding existing and future treatment capacity, and is included in the Appendix.

Of the 53 survey questionnaires distributed, 36 were completed and returned, representing a 68% response rate. In addition to permitted on-site treatment facilities, 10 firms indicated that they also treat waste on-site using a process other than "closed loop" or in-process recycling. In the aggregate, 12,550 tons (1986) were generated and treated on-site by these firms. Therefore, total known hazardous waste generation associated with firms treating waste on-site in 1986 was 125,138 tons. The amount of waste treated and available capacity for these 10 firms is shown on Table 7-18.

TABLE 7-16

EXISTING ON-SITE TREATMENT/DISPOSAL CAPACITY<sup>1</sup>  
(PERMITTED FACILITIES)  
(1986)

FACILITY	GENERALIZED TREATMENT METHOD	FACILITY CAPACITY (Tons)	QUANTITY OF WASTE TREATED/DISPOSED ON-SITE (Tons)	PERCENTAGE OF CAPACITY USED
Raychem Corporation	Aqueous Treatment Metals/Neutralization	3,780	1,155 <sup>2</sup>	31% <sup>2</sup>
O'Brien Corporation	Aqueous Treatment Metals/Neutralization	8,400 <sup>3</sup>	1,160 <sup>3</sup>	14%
Stanford Linear Accelerator	Aqueous Treatment Metals/Neutralization	20,966	16,773	80%
Varian Corporation/ Eimac Division	Aqueous Treatment Metals/Neutralization	420,000 <sup>4</sup>	88,876	21%
Bay Area Circuits, Inc.	Aqueous Treatment Metals/Neutralization	3,528	2,608	74%
Sandoz Corporation (Zoecon)	Aqueous Treatment Metals/Neutralization	2,100	2,016	96%
<b>TOTAL</b>		<b>458,774</b>	<b>112,588</b>	<b>24.5%</b>

<sup>1</sup>Updated on-site generation and capacity data will be included in future revisions to the plan.

<sup>2</sup>Facility was in operation for only seven months in 1986.

<sup>3</sup>Discontinued on-site treatment operations in 1986.

<sup>4</sup>Treatment capacity for cyanide waste is limited to 1,470 tons.

TABLE 7-17

EXISTING ON-SITE STORAGE CAPACITY  
(1986)

FACILITY	STORAGE METHOD	AVERAGE MONTHLY QUANTITY OF WASTES STORED OVER 90 DAYS (Tons)	STORAGE CAPACITY (Tons)	PERCENTAGE OF STORAGE CAPACITY USED
Varian Corporation/ Eimac Division	Container (S01)	9	100	9%
	Tank (S02)	2,700	4,100	66%
	Bin (S05)	3	6	50%
Sandoz Corporation (Zoecon)	Container (S01)	0	42	0%
	Tank (S02)	0	84	0%
Rohm and Haas (Duolite)	Container (S01)	139 <sup>1</sup>	300 <sup>1</sup>	46%
Poetsch and Peterson	Surface Impoundment (S04)	593 <sup>2</sup>	750 <sup>2</sup>	79%
San Mateo County Agricultural Commissioner	Container (S01)	1	5	20%
TOTAL		3,445	5,387	64%

<sup>1</sup>Facility terminated operations in 1987.<sup>2</sup>Facility terminated operations in 1987.

TABLE 7-18

EXISTING ON-SITE TREATMENT/DISPOSAL CAPACITY (1986)<sup>1</sup>  
(FIRMS NOT REQUIRING STATE DHS PERMIT)

FIRM	GENERALIZED TREATMENT METHOD	TREATMENT/DISPOSAL CAPACITY (Tons)	QUANTITY OF WASTE TREATED/DISPOSED ON-SITE (Tons)	PERCENTAGE OF CAPACITY USED
General Circuits	Aqueous Treatment Metals/Neutralization	210.0	189.0	90.0%
Phase II Corporation	Aqueous Treatment Metals/Neutralization	120.0	120.0	100.0%
	Other Recycling	6,000.0	6,000.0	100.0%
Etched Circuits	Aqueous Treatment Metals/Neutralization	50.0	15.0	30.0%
California Etching Corporation	Aqueous Treatment Metals/Neutralization	50.0	32.6	65.0%
Industrial Plating Company	Aqueous Treatment Metals/Neutralization	234.0	234.0	100.0%
Heublein, Inc.	Aqueous Treatment Metals/Neutralization	785.4	640.5	81.5%
International Paint (USA)	Solvent Recovery	30.0	17.0	57.0%
Federal Circuits	Aqueous Treatment Metals/Neutralization	0.5	0.5	100.0%
Stanford Metal Processing	Aqueous Treatment Metals/Neutralization	5,045.0	5,045.0	100.0%
United Airlines Maintenance Operations	Stabilization	256.0	256.0	100.0%
<b>TOTAL</b>		<b>12,780.9</b>	<b>12,549.6</b>	<b>98.0%</b>

<sup>1</sup>Derived from survey questionnaire data.

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## Need for New Facilities

TABLE 7-19

CAPACITY REQUIRED TO MANAGE EXISTING  
HAZARDOUS WASTE GENERATION  
(1986)

GENERALIZED TREATMENT METHOD	REQUIRED TREATMENT CAPACITY <sup>1</sup> (TONS/YEAR)
Aqueous Treatment - Organic	2,429
Aqueous Treatment - Metals/ Neutralization	2,244
Incineration	6,042
Solvent Recovery	11,289
Oil Recovery	8,235
Other Recycling	3,128
Stabilization	2,123
TOTAL	35,490

<sup>1</sup>The figures shown in this table are derived from Tables 7-1 and 7-3. An explanation of deviations between data in these tables and the 1986 manifest summary is found on pages 7.2 - 7.5. Assignment of generalized treatment method by California Waste Category for Miscellaneous Wastes is shown in Table 7-3. The determination of Generalized Treatment Method, including "Other Recycling," was based solely upon Table E-1 of the State Department of Health Service's Technical Reference Manual of the Guidelines for Preparation of Hazardous Waste Management Plans.

## **EXISTING NEED FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES**

The preparation of the Hazardous Waste Management Plan is guided by the assumption that each county is responsible for treatment capacity equivalent to the total amount of waste it generates, i.e., its "fair share." It is recognized that some degree of interdependence with other counties will be necessary since complete County self-sufficiency is an unrealistic and economically untenable option.

To analyze the components of the "fair share" equation, this section will evaluate: (1) the County's demand for hazardous waste management capacity based upon existing waste generation, and (2) determination of need for treatment facilities based upon existing treatment capacity in the County. This section will provide a foundation for a subsequent analysis of the County's future need for hazardous waste management capacity.

### **CAPACITY NECESSARY TO MANAGE EXISTING WASTE GENERATION**

According to existing hazardous waste generation data, in 1986, San Mateo County generated 35,490 tons. Table 7-19 organizes this data in a manner conducive to determining the appropriate treatment method and required treatment capacity for each waste group.

### **CURRENT NEED FOR HAZARDOUS WASTE TREATMENT FACILITIES**

Determination of the County's current need for new treatment capacity is based on a regional (ABAG) "fair share" formula that involves a comparative examination of: (1) the capacity required to treat wastes currently being generated in the County, and (2) the capacity currently available from existing treatment facilities in the County. This analysis is reflected in Table 7-20. While generating 35,490 tons of hazardous waste and at the same time providing 58,800 tons of treatment capacity, San Mateo County is meeting its current "fair share" responsibility for hazardous waste management capacity in the region.

TABLE 7-19

CAPACITY REQUIRED TO MANAGE EXISTING  
HAZARDOUS WASTE GENERATION  
(1986)

GENERALIZED TREATMENT METHOD	REQUIRED TREATMENT CAPACITY <sup>1</sup> (TONS/YEAR)
Aqueous Treatment - Organic	2,429
Aqueous Treatment - Metals/ Neutralization	2,244
Incineration	6,042
Solvent Recovery	11,289
Oil Recovery	8,235
Other Recycling	3,128
Stabilization	2,123
<b>TOTAL</b>	<b>35,490</b>

<sup>1</sup>The figures shown in this table are derived from Tables 7-1 and 7-3. An explanation of deviations between data in these tables and the 1986 manifest summary is found on pages 7.2 - 7.5. Assignment of generalized treatment method by California Waste Category for Miscellaneous Wastes is shown in Table 7-3. The determination of Generalized Treatment Method, including "Other Recycling," was based solely upon Table E-1 of the State Department of Health Service's Technical Reference Manual of the Guidelines for Preparation of Hazardous Waste Management Plans.

TABLE 7-20

CURRENT NEED FOR COMMERCIAL OFF-SITE HAZARDOUS WASTE TREATMENT CAPACITY  
(1986)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT EXISTING HAZARD- OUS WASTE GENERATION (TONS/YEAR)	EXISTING OFF-SITE TREATMENT CAPACITY <sup>1</sup> (TONS/YEAR)	CAPACITY SURPLUS (+) OR DEFICIT (-) (TONS/YEAR)
Aqueous Treatment - Organic	2,429	8,400	+5,971
Aqueous Treatment - Metals/Neutralization	2,244	0	-2,244
Incineration	6,042	0	-6,042
Solvent Recovery	11,289	50,400	+39,111
Oil Recovery	8,235	0	-8,235
Other Recycling	2,681	0	-2,681
Stabilization	2,570	0	-2,570
<b>TOTAL</b>	<b>35,490</b>	<b>58,800</b>	<b>+23,310</b>

<sup>1</sup>Does not include data from California Oil Recyclers or BFI of San Mateo County since both firms terminated their operations in 1987.



# Projected Hazardous Waste Stream

Waste Generation  
Management Capacity  
Need for New Facilities





## Waste Generation



## PROJECTED HAZARDOUS WASTE GENERATION

The planning horizon for this plan is the year 2000. The future hazardous waste stream in San Mateo County will be a function of many variables, particularly industrial growth, population change, waste reduction efforts and clean-up activities. Utilizing existing hazardous waste generation data, and a series of relevant multipliers, the future (2000) County waste stream can be projected. This section of the chapter will develop a projected hazardous waste generation data base for use when determining the County's future waste management needs and responsibility.

### COMPONENTS OF THE PROJECTED WASTE STREAM

#### 1. Commercial/Industrial Generators

Utilizing an economic projection model, the Association of Bay Area Governments (ABAG) developed a set of economic growth multipliers to estimate year 2000 hazardous waste generation for each of the counties in the region. The model is based upon industry output, rather than changes in employment, and assumes that existing technology and trading patterns will remain the same. Therefore, the model does not account for waste reduction potential. A more detailed description of the model is included in the Appendix. Table 8-1 represents economic growth multipliers for San Mateo County, according to waste group, as derived from the ABAG data.

Data regarding existing waste generation indicated that, aside from site clean-up activities and transfer station storage, approximately 33,845 tons of hazardous waste was generated in San Mateo County (1986) by commercial/industrial sources. Utilizing the relevant growth multipliers, Table 8-2 projects waste generation to increase to 45,484 tons (2000), or approximately 35%.

#### 2. Household Generators

In contrast with commercial/industrial derived hazardous waste, household hazardous waste may be projected as a function of population growth. State Department of Finance data indicates that 236,763 households currently reside in San Mateo County. ABAG projects this figure to increase to 265,490 (12%) by the year 2000. Such an increase would upwardly adjust household hazardous waste generation from 6,345 tons (1986) to 7,118 tons (2000), as shown in Table 8-3.

#### 3. Wastes From Clean-up Activities

Existing data indicates that approximately 4,115 tons (1986) of the hazardous waste generated in San Mateo County was associated with site clean-up activities. Clean-up of contaminated hazardous waste sites may result from: (1) abandoned old disposal sites, (2) closed toxic pits, (3) leakages from underground storage tanks, or (4) accidental releases or spills from ongoing commercial or industrial operations.

TABLE 8-1

## ECONOMIC GROWTH MULTIPLIERS ACCORDING TO WASTE GROUP

WASTE GROUP	MULTIPLIER
Waste Oil	0.938
Halogenated Solvents	1.318
Non-Halogenated Solvents	1.589
Organic Liquids	1.248
Pesticides	1.597
PCB's and Dioxins	1.203
Oily Sludges	1.526
Halogenated Organic Sludges and Solids	1.569
Non-Halogenated Organic Sludges and Solids	1.087
Dye and Paint Sludges and Resins	1.586
Metal-Containing Liquids	1.744
Cyanide and Metal Liquids	1.024
Non-Metallic Inorganic Liquids	1.140
Metal-Containing Sludges	1.021
Non-Metallic Inorganic Sludges	1.764
Contaminated Soil	N/A
Miscellaneous Wastes	1.058

TABLE 8-2

**PROJECTED HAZARDOUS WASTE GENERATION  
COMMERCIAL/INDUSTRIAL SOURCES  
(2000)**

WASTE GROUP	EXISTING AMOUNT (1986)	PROJECTED AMOUNT (2000)
Waste Oil	8,319	7,803
Halogenated Solvents	679	895
Non-Halogenated Solvents	10,727	17,045
Organic Liquids	432	539
Pesticides	2,431	3,882
PCB's and Dioxins	0	0
Oily Sludges	1,761	2,687
Halogenated Organic Sludges and Solids	14	22
Non-Halogenated Organic Sludges and Solids	1,628	1,770
Dye and Paint Sludges and Resins	1,088	1,726
Metal-Containing Liquids	1,171	2,042
Cyanide and Metal Liquids	8	8
Non-Metallic Inorganic Liquids	1,054	1,202
Metal-Containing Sludges	155	158
Non-Metallic Inorganic Sludges	1,519	2,680
Contaminated Soil	0	0
Miscellaneous Wastes		
Expired/Surplus Inorganics (141)	7	7
Metal Dust (172)	426	451
FCC Waste (161)	16	17
Other Inorganic Solid Waste (181)	1,854	1,962
Pharmaceutical Waste (311)	4	4
Expired/Surplus Organics (331)	2	2
Empty Containers (Large) (512)	413	437
Empty Containers (Small) (513)	34	36
Laboratory Waste (551)	85	90
Baghouse Waste (591)	18	19
<b>TOTAL</b>	<b>33,845</b>	<b>45,484</b>

TABLE 8-3

PROJECTED HAZARDOUS WASTE GENERATION  
HOUSEHOLD SOURCES  
(2000)

WASTE GROUP	EXISTING AMOUNT (1986)	PROJECTED AMOUNT (2000) <sup>1</sup>
Waste Oil	152.6	171.1
Halogenated Solvents	10.5	11.8
Non-Halogenated Solvents	762.4	855.4
Organic Liquids	4,146.1	4,649.0
Pesticides	578.8	649.0
PCB's and Dioxins	0	0
Oily Sludges	5.3	5.9
Halogenated Organic Sludges and Solids	0	0
Non-Halogenated Organic Sludges and Solids	0	0
Dye and Paint Sludges and Resins	21.1	23.7
Metal-Containing Liquids	15.8	17.7
Cyanide and Metal Liquids	0	0
Non-Metallic Inorganic Liquids	368.3	413.0
Metal-Containing Sludges	21.1	23.7
Non-Metallic Inorganic Sludges	5.3	5.9
Contaminated Soil	0	0
Miscellaneous Wastes	257.3	288.5
<b>TOTAL</b>	<b>6,345.1</b>	<b>7,118.3</b>

<sup>1</sup>Projected waste generation figures are based upon ABAG's year 2000 population multiplier of 1.12 (12%) for San Mateo County.

a. Old Disposal Sites

According to State Department of Health Services "Bond Expenditure Plan" (an inventory of contaminated sites requiring clean-up throughout the State), there are seven contaminated hazardous waste sites in San Mateo County associated with past disposal activities. The sites are identified below, and will be comprehensively discussed in a focused working paper on this subject:

<u>Site</u>	<u>Nature of Contamination</u>
1. Rhone Poulenc/Zeocon (Sandoz Corporation) (East Palo Alto)	Soil contaminated with arsenic, heavy metals (cadmium, lead, selenium, and mercury) and pesticides from a former evaporation pond and underground storage tank located near San Francisco Bay.
2. PG&E, Martin Service Center (Daly City)	Soil contaminated with condensed organic compounds, including phenols, asphaltenes and polynuclear aromatic hydrocarbons (PNA's) at a utility substation and service center.
3. Southern Pacific Railroad Maintenance Yard (Brisbane)	Soil contaminated with heavy metals and on-site wells contaminated with organic liquids (solvents, oils and grease).
4. Willard Products (Redwood City)	Soil contaminated with copper, creosote, pentachlorophene and solvent compounds.
5. Wildberg Brothers/Healy Tibbits Smelting and Refining Company South San Francisco)	Soil contaminated with heavy metals from former refinery operation.
6. Homart Development Co. (South San Francisco)	Soil contaminated with heavy metals, PCB's, copper, lead, and zinc from former steel and wire manufacturing operations.
7. Sun Chemical Corporation (South San Francisco)	Soil contaminated with lead, zinc and cyanide from former printing operations located 200 feet from San Francisco Bay.

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As of March 1988, three of the sites (Sun Chemical Corporation, Wildberg Brothers Healy Tibbits and Homart Development Corporation) have been decontaminated, and all wastes have been removed in accordance

with State Department of Health Services standards. The remaining four sites are undergoing various phases of clean-up. Review of relevant documentation related to each site including: (1) preliminary site assessments, (2) remedial investigation analyses, (3) feasibility studies, and (4) site remediation plans--indicates that three of the remaining four sites will be cleaned up using exclusively on-site methods and, therefore, will not generate hazardous waste for off-site disposal. The fourth site (PG&E, Martin Service Center) will generate approximately 114 tons of contaminated soil requiring off-site disposal. Over ten years, this equates to 11.4 tons/year, as shown in the first column of Table 8-4.

b. Closed Toxic Pits

Toxic pits, i.e., surface impoundments, for liquid hazardous waste, currently require "double lined" construction and installation of a groundwater monitoring system. Existing impoundments which do not meet this standard face closure. In San Mateo County, there are no known existing surface impoundments and, therefore, no known contaminated toxic pit sites. This conclusion is also expected to be true in the year 2000, as indicated in the second column of Table 8-4.

c. Leaking Underground Tanks

Approximately 1,500-2,000 underground storage tanks associated with 800 firms are known to exist in San Mateo County. Most tanks either contain petroleum products or solvents. Every county has numerous leaking underground tanks, many of which have not been discovered. Most leaking tanks are of single-wall construction. Based on data from the San Francisco Regional Water Quality Control Board, currently 200 sites with leaking underground tanks are known to exist in San Mateo County.

The State Department of Health Services estimates that between 50 and 100% of the single-walled tanks in existence will leak by the year 2000. For planning purposes, it is assumed that at least 75% of the existing single-wall tanks will leak.

The County Health Department estimates that approximately 75% of the underground storage tanks in San Mateo County are of single-walled construction, i.e., 1,125 to 1,400 tanks. For planning purposes, it is assumed that 1,300 single-walled underground tanks exist in San Mateo County, and that approximately 1,000 tanks (75%) will leak by the year 2000.

The State Department of Health Services estimates that approximately 100 tons of contaminated soil is associated with each leaking tank. Applying this standard, approximately 100,000 tons of contaminated soil will be generated from leaking single-wall tanks in San Mateo County by the year 2000.

The County Health Department estimates that between 80-90% of the contaminated soil associated with leaking underground tanks can be

TABLE 8-4

PROJECTED CLEAN-UP WASTE  
(2000)

WASTE GROUP	OLD DISPOSAL SITES (Tons/Year)	CLOSED TOXIC PITS (Tons/Year)	UNDERGROUND TANKS (Tons/Year) <sup>1</sup>	OTHER CLEAN-UP WASTES (Tons/Year)	TOTAL (Tons/Year)
Waste Oil	0	0	0	48.7	48.7
Halogenated Solvents	0	0	0	0.0	0.0
Non-Halogenated Solvents	0	0	0	9.5	9.5
Organic Liquids	0	0	0	55.4	55.4
Pesticides	0	0	0	1.6	1.6
PCB's and Dioxins	0	0	0	10.0	10.0
Oily Sludges	0	0	0	33.1	33.1
Halogenated Organic Sludges and Solids	0	0	0	0.0	0.0
Non-Halogenated Organic Sludges and Solids	0	0	0	64.6	64.6
Dye and Paint Sludges and Resins	0	0	0	26.0	26.0
Metal-Containing Liquids	0	0	0	34.0	34.0
Cyanide and Metal Liquids	0	0	0	0.0	0.0
Non-Metallic Inorganic Liquids	0	0	0	20.6	20.6
Metal-Containing Sludges	0	0	0	0.0	0.0
Non-Metallic Inorganic Sludges	0	0	0	0.0	0.0
Contaminated Soil	11.4	0	1,500	212.9	1,724.3
Miscellaneous Wastes	0	0	0	317.4	317.4
<b>TOTAL</b>	<b>11.4</b>	<b>0</b>	<b>1,500</b>	<b>833.8</b>	<b>2,345.2</b>

<sup>1</sup>It is recognized that some residual amounts of hazardous waste oil, solvents, or sludges will result from remediation of leaking underground tanks; however, it is not possible to estimate these amounts with any degree of certainty.

rendered non-hazardous through a prolonged evaporation process known as aeration. For planning purposes, it is assumed that 85% of the contaminated soil will be aerated. Aeration, therefore, will reduce the amount of soil requiring off-site disposal from 100,000 tons to 15,000 tons. Over 10 years, this equates to 1,500 tons/year.

There is no indication that the Bay Area Air Quality Management District will prohibit aeration in the future, although the agency is strengthening its regulations regarding emissions control. In addition to aeration, emerging technologies (e.g., vapor extraction, biodegradation, thermal destruction and chemical neutralization) will significantly reduce the need for off-site management.

With limited empirical data to justify further reduction in projected waste generation, the plan assumes that 1,500 tons per year of contaminated soil will be generated through the year 2000, as shown in the third column of Table 8-4.

#### d. Other Clean-up Wastes

Of the 4,115 tons of hazardous wastes associated with clean-up activities generated in 1986, 721 tons (17.5%) were related to accidental releases or spills, i.e., one-time only waste generation. This amount is expected to increase with industrial growth. Using ABAG growth multipliers for projected waste generation, 833.8 tons of hazardous waste associated with spills or accidental releases is estimated for the year 2000. This information, according to waste group, appears in the fourth column of Table 8-4.

### 4. New Wastes

#### a. Additional Pre-treatment Sludges

Numerous firms treat their hazardous waste on site, usually through a neutralization process, with discharge of the resultant solution into the sewer. Sewage pre-treatment may involve installation of equipment which concentrates the hazardous waste into a residual sludge. With recent changes in the federal Clean Water Act and escalating costs for hazardous waste management, more companies are expected to engage in this form of sewage pre-treatment.

The amount of pre-treatment sludge currently generated in the County may not be readily derived from manifest data sources and, therefore, require extrapolation from survey information. In order to project pre-treatment sludge generation, a survey questionnaire was prepared and distributed to all firms with sewage pre-treatment operations, as identified by local sewer authorities (37 firms). Twenty-nine of 37 firms (86%) completed and returned the survey. Of this group, nine firms indicated that they generate a pre-treatment sludge, which in the aggregate equated to 314 tons. This figure was adjusted to 343 tons to account for non-respondent firms. Applying ABAG economic growth multipliers, the projected waste generation value for pre-treatment sludge is 424 tons, representing an 81 ton increase by the year 2000, as shown in Table 8-5.

TABLE 8-5

PROJECTED QUANTITIES OF NEW HAZARDOUS WASTE STREAMS  
(2000)

	ADDITIONAL PRE- TREATMENT SLUDGES <sup>1</sup> Tons/Year	OTHER NEW WASTES <sup>2</sup>
Waste Oil	0	0
Halogenated Solvents	0	0
Non-Halogenated Solvents	0	0
Organic Liquids	0	0
Pesticides	0	0
PCB's and Dioxins	0	0
Oily Sludges	0	0
Halogenated Organic Sludges/Solids	0	0
Non-Halogenated Organic Sludges/Solids	0	0
Dye and Paint Sludges and Resins	77	0
Metal-Containing Liquids	0	0
Cyanide and Metal Liquids	0	0
Non-Metallic Inorganic Liquids	0	0
Metal-Containing Sludges	4	0
Non-Metallic Inorganic Sludges	0	0
Contaminated Soil	0	0
Miscellaneous Wastes	0	0
<b>TOTAL</b>	<b>81</b>	<b>0</b>

<sup>1</sup>Derived from survey questionnaire data, as explained on page 8.8.

<sup>2</sup>No additional information is available regarding new industries establishing themselves in the County.

## b. Other New Wastes

New industries which would generate hazardous waste at levels beyond that accounted for in this chapter are not anticipated.

## 5. Consolidation of Projected Hazardous Waste Generation Data

Table 8-6 consolidates each of the waste generation variables previously discussed to reflect total projected waste generation. In summary, total projected hazardous waste generation in the year 2000 will be 55,025 tons.

### **PROJECTED GENERATION/STANDARD INDUSTRIAL CLASSIFICATION**

For a more focused analysis of the commercial/industrial component of the projected hazardous waste stream, Tables 8-8 and 8-9 evaluate projected waste generation according to SIC Code. As in the previous analysis of existing waste generation, an SIC Code number was assigned to the 1,062 firms known to generate hazardous waste for off-site management (Table 8-8) and ten firms for on-site management (Table 8-9), and projected waste generation was derived using economic growth multipliers developed by ABAG. Table 8-7 identifies the economic growth multipliers used for each SIC Code. Again, chemical and allied products, air transport, electrical and electronic machinery, and automotive repair are identified as the top waste generating industries in San Mateo County.

### **WASTE REDUCTION POTENTIAL**

Projected waste generation data thus far has assumed that current technology and industrial practices will remain basically the same. Therefore, the resultant figures do not incorporate any estimates of future waste reduction potential. As discussed throughout this plan, the optimal form of hazardous waste management is waste reduction. This involves either reducing the amount of waste ultimately produced (source reduction), or recycling it on the site on which it is generated.

Forecasting future waste reduction practice is difficult due to the range of influencing factors, primarily economic, regulatory and technological. A broad range of waste reduction potential estimates are available in the literature. The State Department of Health Services has cited that up to 25% waste reduction potential is possible, depending on waste type. A subsequent analysis by Jacobs Engineering Group, a consultant retained by the State Department of Health Services, indicates an average range of between 17-39% for 12 industrial processes common in California.

A federal report issued by the Congressional Office of Technical Assistance projects waste reduction to increase five percent each year over the next five years (or 41%), and a draft report by the Natural Resources Defense Council projects waste reduction to increase five percent each year over the next ten years (or 65%). Incorporating all available data, the Association of Bay Area Governments has set a waste reduction potential estimate for the region at between 10 and 40%. This is a reasonable projection, and will be the basis for data adjustments to reflect assumed future waste reduction practice in San Mateo County.

TABLE 8-6

**TOTAL PROJECTED QUANTITIES OF HAZARDOUS WASTE GENERATION  
NO WASTE REDUCTION  
(2000)**

WASTE GROUP	PROJECTED COMMERCIAL/ INDUSTRIAL WASTE (Tons/Year)	PROJECTED HOUSEHOLD WASTE (Tons/Year)	PROJECTED CLEAN-UP WASTE (Tons/Year)	PROJECTED ADDITIONAL PRE-TREATMENT SLUDGE WASTES (Tons/Year)	TOTAL (Tons/Year)
Waste Oil	7,803	171	49	0	8,023
Halogenated Solvents	895	12	0	0	907
Non-Halogenated Solvents	17,045	855	9	0	17,909
Organic Liquids	539	4,649	55	0	5,243
Pesticides	3,882	649	2	0	4,533
PCB's and Dioxins	0	0	10	0	10
Oily Sludges	2,687	6	33	0	2,726
Halogenated Organic Sludges and Solids	22	0	0	0	22
Non-Halogenated Organic Sludges and Solids	1,770	0	65	0	1,835
Dye and Paint Sludges and Resins	1,726	24	26	77	1,853
Metal-Containing Liquids	2,042	18	34	0	2,094
Cyanide and Metal Liquids	8	0	0	0	8
Non-Metallic Inorganic Liquids	1,202	413	21	0	1,636
Metal-Containing Sludges	158	24	0	4	186
Non-Metallic Inorganic Sludges	2,680	6	0	0	2,686
Contaminated Soil	0	0	1,724	0	1,724
Miscellaneous Wastes <sup>1</sup>	3,025	288	317	0	3,630
<b>TOTAL</b>	<b>45,484</b>	<b>7,115</b>	<b>2,345</b>	<b>81</b>	<b>55,025</b>

<sup>1</sup>An analysis of Miscellaneous Wastes by California Waste Category for this column appears in Table 8-2.

TABLE 8-7**ECONOMIC GROWTH MULTIPLIERS FOR EACH SIC CODE**

The projected waste generation values identified in Tables 8.8 and 8.9 are based upon economic growth multipliers developed by ABAG. Multipliers were developed for both select SIC Code Numbers and all Waste Groups. The following SIC Code multipliers were used. If an SIC Code multiplier was not available, the appropriate Waste Group multiplier identified in Table 8-1 was used in its place.

SIC CODE NUMBER	MULTIPLIER
15	1.386
17	1.386
20	1.289
24	1.773
25	1.754
27	1.567
28	1.597
29	0.887
30	1.153
31	1.153
32	1.550
33	0.853
34	1.100
35	1.854
36	0.999
37	1.105
38	2.826
39	2.827
41	1.764
42	1.763
43	0.0
44	1.764
45	1.764
48	1.964
49	1.183
50	1.466
53	1.433
55	1.436
57	0.0
63	1.667
72	0.778
73	2.185
75	1.136
76	1.137
80	1.187
82	1.307
91	1.118
92	1.122
94	1.117
95	1.114
99	1.000

TABLE 8-8

PROJECTED HAZARDOUS WASTE GENERATION  
 PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS MANAGED OFF-SITE<sup>1</sup>  
 (2000)  
 INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-07	SIC-15	SIC-16	SIC-17	SIC-20	SIC-24	SIC-25
Waste Oil						4.98	52.27
Halogenated Solvents		0.01	0.01	0.03		0.02	
Non-Halogenated Solvents		0.12	0.33	18.32	0.03	0.96	14.96
Organic Liquids		24.84			0.01		
Pesticides	0.51						
PCB's and Dioxins							
Oily Sludges		8.21			66.10		
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids				9.47		0.03	
Dye and Paint Sludges and Resins		0.04	0.03	12.35	0.03	0.48	
Metal-Containing Liquids					1.84		
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids		0.01	0.07	0.06	0.01		
Metal-Containing Sludges			0.02	0.01			
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.19	0.06	1.93	1.34	0.17	0.07	
<b>TOTAL</b>	<b>0.70</b>	<b>33.29</b>	<b>2.39</b>	<b>41.58</b>	<b>68.19</b>	<b>6.34</b>	<b>67.23</b>

SIC-07: Agricultural services

SIC-17: Specialized contractors

SIC-25: Furniture and fixtures

SIC-15: Building construction

SIC-20: Food production

SIC-16: Non-building construction

SIC-24: Lumber and wood products

<sup>1</sup>There exists a 2.0% deviation between total waste generation reflected in this table and that in Table 8-2 (46,413 tons and 45,484 tons, respectively). The deviation is based upon multiple "rounding off" decisions necessitated by the "No Survey Method," the subsequent projections, and the inability to assign an SIC Code to waste exported from the County by route service haulers.

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

## INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-26	SIC-27	SIC-28	SIC-29	SIC-30	SIC-31	SIC-32
Waste Oil		28.39	66.64	2,593.40	6.16		
Halogenated Solvents	6.43	25.70	28.36	0.03	0.70		
Non-Halogenated Solvents	17.56	126.85	15,676.38	1.85	102.40		0.06
Organic Liquids			79.51				
Pesticides			3,875.52				
PCB's and Dioxins							
Oily Sludges		8.37	2,373.75	36.30			
Halogenated Organic Sludges/Solids			20.60				
Non-Halogenated Organic Sludges and Solids	0.01		29.42	509.77	0.01	811.12	
Dye and Paint Sludges and Resins		47.48	1,036.93	0.01			3.22
Metal-Containing Liquids		0.08	9.74	0.04	0.14		0.02
Cyanide and Metal Liquids		0.02		0.01			
Non-Metallic Inorganic Liquids	9.82	6.38	60.54	0.36			0.02
Metal-Containing Sludges		0.02	0.05				
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.01	82.66	146.19	111.36	0.02		0.16
<b>TOTAL</b>	<b>33.83</b>	<b>325.95</b>	<b>23,403.63</b>	<b>3,253.13</b>	<b>109.43</b>	<b>811.12</b>	<b>3.48</b>

SIC-26: Paper products

SIC-27: Printing and publishing

SIC-28: Chemical and allied products

SIC-29: Petroleum related industries

SIC-30: Rubber and plastics products

SIC-31: Leather products

SIC-32: Stone, clay, glass,  
concrete products

TABLE 8-8 (Continued)

**PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)**

INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-33	SIC-34	SIC-35	SIC-36	SIC-37	SIC-38	SIC-39
Waste Oil		40.71	164.99	49.62	17.41	28.37	299.46
Halogenated Solvents		8.68	7.92	104.29	0.55	3.42	.17
Non-Halogenated Solvents	3.16	23.01	16.28	151.76	1.77	12.15	13.03
Organic Liquids		16.74		236.34	2.38		
Pesticides							
PCB's and Dioxins							
Oily Sludges		12.62		124.44	4.82	0.42	
Halogenated Organic Sludges/Solids		.59	.52				
Non-Halogenated Organic Sludges and Solids		4.41	37.67	154.74	0.02	0.14	0.08
Dye and Paint Sludges and Resins		1.66	0.44	74.48	0.28	0.90	0.85
Metal-Containing Liquids		5.89	7.27	416.79	6.36	0.40	0.37
Cyanide and Metal Liquids		2.17	0.59	05.14	0.02	0.14	0.06
Non-Metallic Inorganic Liquids	4.44	3.56	4.80	890.77	0.40	1.44	0.54
Metal-Containing Sludges		3.41	1.11	127.97	0.08	0.25	0.11
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	1,323.38	5.96	.24	78.62	14.67	2.18	0.06
<b>TOTAL</b>	<b>1,330.98</b>	<b>129.41</b>	<b>241.83</b>	<b>2,415.01</b>	<b>48.76</b>	<b>49.82</b>	<b>314.73</b>

SIC-33: Primary metal industries  
 SIC-34: Fabricated metal products  
 SIC-35: Machinery (except electrical)  
 SIC-36: Electrical and electronic

SIC-37: Transportation equipment  
 SIC-38: Measuring instruments  
 (including medical, photo-graphic, and optical)

SIC-39: Miscellaneous manufacturing

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

## INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-41	SIC-42	SIC-43	SIC-44	SIC-45	SIC-48	SIC-49
Waste Oil		298.33			3,078.76		50.06
Halogenated Solvents		0.05		0.02	261.14	.02	359.54
Non-Halogenated Solvents	8.38	0.92	0.08	0.18	120.80	.39	4.46
Organic Liquids		22.97			29.42	23.49	
Pesticides							
PCB's and Dioxins							
Oily Sludges				18.40	21.29	4.83	3.13
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids	97.21			7.02	35.39		1.96
Dye and Paint Sludges and Resins	0.02	0.09	0.02		508.14		0.14
Metal-Containing Liquids					441.04	11.25	3.11
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids	0.04	0.28	0.02	0.02	0.04	32.78	8.13
Metal-Containing Sludges	0.02	0.09	0.01		0.02		
Non-Metallic Inorganic Sludges					2,680.06		
Contaminated Soil							
Miscellaneous Wastes	0.81	8.04	0.49	0.02	888.69	18.44	78.44
<b>TOTAL</b>	<b>106.48</b>	<b>330.77</b>	<b>0.62</b>	<b>25.65</b>	<b>8,064.78</b>	<b>91.21</b>	<b>508.99</b>

SIC-41: Public transit

SIC-42: Motor freight and warehousing

SIC-43: U.S. Government (motor freight)

SIC-44: Water transportation

SIC-45: Air transport

SIC-48: Communication

SIC-49: Electric, gas, and  
sanitary services

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

INDUSTRY GROUP (SIC CODE-TONS/YEAR)							
WASTE GROUP	SIC-50	SIC-51	SIC-52	SIC-53	SIC-54	SIC-55	SIC-57
Waste Oil						568.58	
Halogenated Solvents	0.12	0.12	0.01			0.63	
Non-Halogenated Solvents	1.30	2.27	0.19	2.48	0.08	43.73	0.08
Organic Liquids							
Pesticides	0.21	0.14	0.08	0.59	0.62		0.62
PCB's and Dioxins							
Oily Sludges						11.36	
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids		0.07				9.33	
Dye and Paint Sludges and Resins	0.37	0.27	0.13	0.04	0.05	1.01	0.05
Metal-Containing Liquids		0.24					
Cyanide and Metal Liquids		0.03					
Non-Metallic Inorganic Liquids	0.92	0.81	0.08	0.04	0.03	3.00	0.03
Metal-Containing Sludges	0.01					1.01	
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	4.21	1.49	0.68	0.04	0.28	143.86	0.28
<b>TOTAL</b>	<b>7.14</b>	<b>5.44</b>	<b>1.17</b>	<b>3.50</b>	<b>1.06</b>	<b>782.51</b>	<b>1.06</b>

SIC-50: Wholesale trade (durable goods)  
SIC-51: Wholesale trade (non-durable goods)  
SIC-52: Building materials, hardware, and  
garden supply (retail)

SIC-53: General merchandise stores  
SIC-54: Food stores  
SIC-55: Auto dealers and service stations  
SIC-57: Furniture and home furnishing stores

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

## INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-59	SIC-62	SIC-63	SIC-65	SIC-72	SIC-73	SIC-75
Waste Oil						459.66	1,253.83
Halogenated Solvents				0.01	6.65	8.00	1.16
Non-Halogenated Solvents	0.03			0.16		25.89	128.67
Organic Liquids		3.91				42.76	39.48
Pesticides	0.02						
PCB's and Dioxins							
Oily Sludges						7.25	21.88
Halogenated Organic Sludges/Solids							0.47
Non-Halogenated Organic Sludges and Solids					34.32	36.82	
Dye and Paint Sludges and Resins	0.03			0.02		.24	33.31
Metal-Containing Liquids						1,135.35	
Cyanide and Metal Liquids						1.27	
Non-Metallic Inorganic Liquids	0.01			0.03		173.99	5.46
Metal-Containing Sludges				0.01		0.11	1.82
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	0.14		0.38	0.96	0.18	153.37	173.34
<b>TOTAL</b>	<b>0.23</b>	<b>3.91</b>	<b>0.38</b>	<b>1.19</b>	<b>41.15</b>	<b>2,044.70</b>	<b>1,659.41</b>

SIC-59: Miscellaneous retail  
SIC-62: Investment brokers  
SIC-63: Insurance providers

SIC-65: Real estate offices  
SIC-72: Cleaning and domestic services  
SIC-73: Business services

SIC-75: Automotive repairs,  
service stations, and  
garages

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

## INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-76	SIC-79	SIC-80	SIC-82	SIC-89	SIC-91	SIC-92
Waste Oil							1.75
Halogenated Solvents	0.13	0.01			0.04		
Non-Halogenated Solvents	3.57	0.16	1.19	1.70	0.65	0.15	0.63
Organic Liquids						5.82	
Pesticides		0.69					0.10
PCB's and Dioxins							1.05
Oily Sludges							
Halogenated Organic Sludges/Solids							
Non-Halogenated Organic Sludges and Solids	0.09						
Dye and Paint Sludges and Resins	1.61			0.01			
Metal-Containing Liquids			0.33	0.01			
Cyanide and Metal Liquids							
Non-Metallic Inorganic Liquids	0.33	0.01	0.02	0.03	0.01		
Metal-Containing Sludges	0.10						
Non-Metallic Inorganic Sludges							
Contaminated Soil							
Miscellaneous Wastes	9.51	0.17	1.07	1.31	0.01	0.85	0.38
<b>TOTAL</b>	<b>15.34</b>	<b>1.04</b>	<b>2.62</b>	<b>3.06</b>	<b>0.71</b>	<b>6.82</b>	<b>3.92</b>

SIC-76: Miscellaneous repair services

SIC-79: Amusement and recreation services

SIC-80: Health services

SIC-82: Education services

SIC-89: Miscellaneous services

SIC-91: General government and  
public administrationSIC-92: Justice, public  
order, and safety  
administration

TABLE 8-8 (Continued)

PROJECTED HAZARDOUS WASTE GENERATION PREDOMINANT COMMERCIAL  
AND INDUSTRY GROUPS MANAGED OFF-SITE  
(2000)

WASTE GROUP	SIC-95	INDUSTRY GROUP (SIC CODE-TONS/YEAR) SIC-99	HOUSEHOLD HAZARDOUS WASTES <sup>1</sup>
Waste Oil			171.1
Halogenated Solvents			11.8
Non-Halogenated Solvents		2.68	855.4
Organic Liquids		2.86	4,649.0
Pesticides	1.59		0.0
PCB's and Dioxins			5.9
Oily Sludges			0.0
Halogenated Organic Sludges/Solids			0.0
Non-Halogenated Organic Sludges			
Dye and Paint Sludges and Resins			23.7
Metal-Containing Liquids			17.7
Cyanide and Metal Liquids			0.0
Non-Metallic Inorganic Liquids			413.0
Metal-Containing Sludges			23.7
Non-Metallic Inorganic Sludges			5.9
Contaminated Soil			0.0
Miscellaneous Wastes			288.5
<b>TOTAL</b>	<b>1.59</b>	<b>5.54</b>	<b>7,118.3</b>

SIC-95: Administration of environmental quality programs

SIC-99: Non-classifiable establishments

<sup>1</sup>This column reflects data presented in Table 8.3. Waste generation figures are based upon ABAG's year 2000 population multiplier of 1.12 (12%) for San Mateo County, as applied to existing household hazardous waste data (Table 7-5). Additional explanation is found on page 8.1.

TABLE 8-9

PROJECTED HAZARDOUS WASTE GENERATION  
 PREDOMINANT COMMERCIAL AND INDUSTRY GROUPS  
 MANAGED ON-SITE  
 (2000)

INDUSTRY GROUP (SIC CODE-TONS/YEAR)

WASTE GROUP	SIC-20	SIC-28	SIC-34	SIC-36	SIC-45	SIC-73
Waste Oil						
Halogenated Solvents						
Non-Halogenated Solvents		27				
Organic Liquids	826					
Pesticides						
PCB's and Dioxins						
Oily Sludges						
Halogenated Organic Sludges/Solids						
Non-Halogenated Organic Sludges and Solids						
Dye and Paint Sludges and Resins						
Metal-Containing Liquids			5,807	91,347	452	36,649
Cyanide and Metal Liquids				6,334		
Non-Metallic Inorganic Liquids		5,072		1,217		
Metal-Containing Sludges						
Non-Metallic Inorganic Sludges						
Contaminated Soil						
Miscellaneous Wastes						
<b>TOTAL</b>	<b>826</b>	<b>5,099</b>	<b>5,807</b>	<b>98,898</b>	<b>452</b>	<b>36,649</b>

SIC-20: Food and beverage production  
 SIC-28: Chemical and allied products  
 SIC-34: Fabricated metal products

SIC-36: Electrical and electronic machinery  
 SIC-45: Air transport  
 SIC-73: Business services

For commercial and industrial hazardous waste, year 2000 projected waste generation data is adjusted to reflect waste reduction potential, as shown in Table 8-10. Hazardous waste from these sources is estimated to range between 27,337 and 40,890 tons, or an average of 34,115 tons (25% waste reduction).

When combined with other waste-generating sources, total projected hazardous waste generation (2000), with 25% waste reduction for the commercial and industrial component, would be reduced from 55,025 tons to 43,656 tons, as shown in Table 8-10.

TABLE 8-10

PROJECTED HAZARDOUS WASTE GENERATION  
COMMERCIAL/INDUSTRIAL SOURCES: WASTE REDUCTION SCENARIOS  
(2000)

WASTE GROUP	PROJECTED AMOUNT NO WASTE REDUCTION (2000) (Tons/Year)	PROJECTED AMOUNT 10-40% WASTE REDUCTION (2000) (Tons/Year)	PROJECTED AMOUNT 25% WASTE REDUCTION (2000) (Tons/Year)
Waste Oil	7,803	4,682 - 7,023	5,852
Halogenated Solvents	895	537 - 806	671
Non-Halogenated Solvents	17,045	10,227 - 15,341	12,784
Organic Liquids	539	323 - 485	404
Pesticides	3,882	2,329 - 3,494	2,912
PCB's and Dioxins	0	N/A	N/A
Oily Sludges	2,687	1,612 - 2,418	2,015
Halogenated Organic Sludges and Solids	22	13 - 20	17
Non-Halogenated Organic Sludges and Solids	1,770	1,062 - 1,593	1,328
Dye and Paint Sludges and Resins	1,726	1,036 - 1,553	1,295
Metal-Containing Liquids	2,042	1,225 - 1,838	1,532
Cyanide and Metal Liquids	8	5 - 7	6
Non-Metallic Inorganic Liquids	1,202	721 - 1,082	902
Metal-Containing Sludges	158	42 - 95	118
Non-Metallic Inorganic Sludges	2,680	1,608 - 2,412	2,010
Contaminated Soil	0	N/A	N/A
Miscellaneous Wastes	3,025	1,815 - 2,723	2,269
<b>TOTAL</b>	<b>45,484</b>	<b>27,337 - 40,890</b>	<b>34,115</b>

TABLE 8-11

**TOTAL PROJECTED QUANTITIES OF HAZARDOUS WASTE  
WASTE REDUCTION SCENARIO  
(2000)**

WASTE GROUP	PROJECTED COMMERCIAL/INDUSTRIAL WASTE (25% Waste Reduction) (Tons/Year)	PROJECTED HOUSEHOLD WASTE (Tons/Year)	PROJECTED CLEAN-UP WASTE (Tons/Year)	PROJECTED ADDITIONAL PRE-TREATMENT SLUDGE (Tons/Year)	TOTAL (Tons/Year)
Waste Oil	5,852	171	49	0	6,072
Halogenated Solvents	671	12	0	0	683
Non-Halogenated Solvents	12,784	855	9	0	13,648
Organic Liquids	404	4,649	55	0	5,108
Pesticides	2,912	649	2	0	3,563
PCB's and Dioxins	N/A	0	10	0	10
Oily Sludges	2,015	6	33	0	2,054
Halogenated Organic Sludges and Solids	17	0	0	0	17
Non-Halogenated Organic Sludges and Solids	1,328	0	65	0	1,393
Dye and Paint Sludges and Resins	1,295	24	26	77	1,422
Metal-Containing Liquids	1,532	18	34	0	1,584
Cyanide and Metal Liquids	6	0	0	0	6
Non-Metallic Inorganic Liquids	902	413	21	0	1,336
Metal-Containing Sludges	118	24	0	4	146
Non-Metallic Inorganic Sludges	2,010	6	0	0	2,016
Contaminated Soil	N/A	0	1,724	0	1,724
Miscellaneous Wastes	2,269	288	317	0	2,874
<b>TOTAL</b>	<b>34,115</b>	<b>7,115</b>	<b>2,345</b>	<b>81</b>	<b>43,656</b>

<sup>1</sup>The State Department of Health Services has cited that up to 25% waste reduction potential is possible, depending on waste type. A subsequent analysis by Jacobs Engineering Group indicates an average range of between 17-39% for 12 industrial processes common in California. Incorporating all available data, the Association of Bay Area Governments has set a waste reduction potential estimate for the region at between 10 and 40%. The 25% waste reduction assumption used in this column represents an average of this range.

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Management Capacity



## PROJECTED COMMERCIAL HAZARDOUS WASTE MANAGEMENT CAPACITY

A primary emphasis of the Hazardous Waste Management Plan will be to assure that sufficient off-site facility capacity is available proportionate to the County's waste generation needs. This section will examine projected changes in commercial facility capacity.

### PROJECTED HAZARDOUS WASTE MANAGEMENT CAPACITY

Romic Chemical Corporation, located in East Palo Alto, serves as a major chemical recycler for businesses using solvents and other organic compounds, including alcohols, acetates, and fluorocarbons. The firm remains as the only commercial off-site hazardous waste management facility in San Mateo County.

As described in the section on existing management capacity, data furnished by Romic Chemical Corporation indicates that the facility currently maintains a total treatment capacity of 58,800 tons. Recent communication with Romic indicates that the facility will expand its total treatment capacity to 95,480 tons by the year 2000, as shown in Table 8-12. This will involve increasing solvent recovery capacity from 50,400 tons to 60,480 tons, and aqueous treatment capacity from 8,400 tons to 35,000 tons. No corresponding loss of treatment capacity at Romic is expected by the year 2000.

The State Department of Health Services is presently reviewing an application by Quicksilver Products, Inc., to operate a mercury recycling facility in Brisbane. The application was submitted in 1986, although the firm has been in operation since that time. Quicksilver Products, Inc., currently receives, stores, treats and recycles materials containing mercury, particularly those derived from laboratory instruments. The projected capacity for the facility is 1.13 tons per year. As facility permit approval is still pending, this statistic is not formally included in Table 8-12.

An application has also been submitted to the State Department of Health Services by Redwood City Services Corporation to develop an oil recovery facility in Redwood City. The facility is intended to separate certain hydrocarbons, water and solids from contaminated petroleum products, and would have design capacity of 90,000 tons per year. Since the facility is in the initial phase of the application process, this statistic is not included in the discussion of projected treatment capacity; however, if approved, will be included in subsequent updates of the plan.

TABLE 8-12

PROJECTED COMMERCIAL OFF-SITE TREATMENT/DISPOSAL CAPACITY  
(2000)

FACILITY <sup>1</sup>	GENERALIZED TREATMENT METHOD	EXISTING CAPACITY (1988) Tons/Year	PROJECTED/PROPOSED CAPACITY (2000) Tons/Year	PROJECTED/PROPOSED LOSS OF CAPACITY (2000) Tons/Year	TOTAL PROJECTED COUNTY CAPACITY (2000) Tons/Year
Romic Chemical Corporation	Aqueous Treatment-- Organic	8,400	26,600	0	35,000 <sup>2</sup>
	Solvent Recovery	50,400	10,080	0	60,480
<b>TOTAL</b>		<b>58,800</b>			<b>95,480</b>

<sup>1</sup>Quicksilver Products, Inc., an existing mercury recovery operation with facility permit approval pending, will maintain 1.13 tons/year treatment capacity.

<sup>2</sup>The 35,000 tons/year capacity will involve a combined aqueous treatment--organic and aqueous treatment--metals/neutralization process. Since organic wastes will constitute the majority of the waste stream, and to avoid double counting, this statistic is only shown once.

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Need for New Facilities



## PROJECTED NEED FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES

The preparation of the Hazardous Waste Management Plan is guided by the assumption that each county is responsible for treatment capacity equivalent to the total amount of waste it generates, i.e., its "fair share." It is recognized that some degree of interdependence with other counties will be necessary since complete County self-sufficiency is an unrealistic and economically untenable option.

To analyze the components of the "fair share" equation, this section will evaluate: (1) the County's demand for hazardous waste management capacity based upon projected waste generation, and (2) determination of projected need for treatment facilities based upon projected treatment capacity in the County.

### CAPACITY NECESSARY TO MANAGE PROJECTED WASTE GENERATION

The section on projected hazardous waste generation indicates that by the year 2000, San Mateo County will generate 55,025 tons under a no waste reduction scenario and 43,656 tons under a waste reduction scenario. Tables 8-13 and 8-14 organize this data in a manner conducive to determining the appropriate treatment method and required treatment capacity for each waste group.

### FUTURE NEED FOR HAZARDOUS WASTE TREATMENT FACILITIES (THREE SCENARIOS)

#### 1. Existing Permitted Facilities

Projecting County's future need for new treatment capacity involves a comparative examination of: (1) the capacity required to treat future wastes generated in the County, and (2) the projected capacity available from existing permitted treatment facilities in the County. In other words, required capacity minus available capacity will define the County's need for new management facilities. This analysis is reflected in Tables 8-15 and 8-16. If waste projections are realized and anticipated facility improvements are made, San Mateo County would be meeting its future "fair share" responsibility for hazardous waste management capacity in the region. Actual determination will be based on the most current data available and agreements reached in the Bay Area regional capacity allocation process, in which San Mateo County participates.

#### 2. Existing Non-Permitted Facilities With Permit Approval Pending

Quicksilver Products, Inc., an existing mercury recycler in Brisbane, has submitted an application to the State Department of Health Services for an off-site treatment facility permit. Determination of the County's future need for new treatment capacity under a scenario which includes this firm as a permitted facility is reflected in Tables 8-17 and 8-18. Under this scenario, the County will be exceeding its projected "fair share" responsibility for treatment capacity, with a 40,456 ton capacity surplus under a no waste reduction scenario and a 51,825 ton capacity surplus under a waste reduction scenario.

### 3. Existing Non-Permitted Facilities Which Will Terminate Operations

There are no existing off-site facilities operating without a State facility permit that have chosen to either terminate operations or have been denied a permit.

#### **FUTURE NEED FOR RESIDUAL REPOSITORIES**

All hazardous waste treatment methods produce a residual product which cannot be further treated. The ratio of residual-to-waste generation ranges from 10-50%. Such residuals require permanent storage in a large, long-term storage facility, known as a residuals repository. Residual repositories have only been conceptually designed, and would differ from traditional land storage facilities by only: (1) accepting solid or stabilized hazardous waste, and (2) locating above exceedingly impermeable soils.

Determination of the amount of residual repository capacity needed to accommodate the projected amount waste generated in San Mateo County involved applying residual ratio multipliers to the projected waste stream. The results reveal that 13,695 tons capacity will be necessary under a no waste reduction scenario, and 10,621 tons capacity will be necessary under a waste reduction scenario, as shown in Tables 8-19 and 8-20, respectively. This equates to a cumulative need for the planning period (1986-2000) of 168,223 tons capacity under a no waste reduction scenario, and 145,170 tons capacity under a waste reduction scenario, as shown in Tables 8-21 and 8-22, respectively.

TABLE 8-13

**CAPACITY REQUIRED TO MANAGE FUTURE  
HAZARDOUS WASTE GENERATION  
(No Waste Reduction Scenario)**

GENERALIZED TREATMENT METHOD	REQUIRED TREATMENT CAPACITY <sup>1</sup> (Tons/Year)
Aqueous Treatment - Organic	4,533
Aqueous Treatment - Metals/ Neutralization	3,738
Incineration	5,444
Solvent Recovery	18,816
Oil Recovery	10,749
Other Recycling	8,343
Stabilization	3,402
<b>TOTAL</b>	<b>55,025</b>

<sup>1</sup>Miscellaneous waste values are distributed between "Other Recycling" and "Stabilization" treatment methods at a ratio corresponding with the proportions established in Table 7-2 (85.4% and 14.6%, respectively).

TABLE 8-14

**CAPACITY REQUIRED TO MANAGE FUTURE  
HAZARDOUS WASTE GENERATION  
(Waste Reduction Scenario)**

GENERALIZED TREATMENT METHOD	REQUIRED TREATMENT CAPACITY <sup>1</sup> (Tons/Year)
Aqueous Treatment - Organic	3,563
Aqueous Treatment - Metals/ Neutralization	2,926
Incineration	4,566
Solvent Recovery	14,331
Oil Recovery	8,126
Other Recycling	7,562
Stabilization	2,582
<b>TOTAL</b>	<b>43,656</b>

<sup>1</sup>Miscellaneous waste values are distributed between "Other Recycling" and "Stabilization" at a ratio corresponding with the proportions established in Table 7-3 (85.5% and 14.6%, respectively).

TABLE 8-15

PROJECTED NEED FOR OFF-SITE HAZARDOUS WASTE TREATMENT CAPACITY  
 EXISTING PERMITTED FACILITIES SCENARIO  
 (No Waste Reduction)  
 (2000)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZARD- OUS WASTE GENERATION <sup>1</sup> (Tons/Year)	PROJECTED OFF-SITE TREATMENT CAPACITY (Tons/Year)	CAPACITY SURPLUS (+) OR DEFICIT (-) (Tons/Year)
Aqueous Treatment - Organic	4,533	35,000	+30,467
Aqueous Treatment - Metals/Neutralization	3,738	--	- 3,738
Incineration	5,444	--	- 5,444
Solvent Recovery	18,816	60,480	+41,664
Oil Recovery	10,749	--	-10,749
Other Recycling	8,343	--	- 8,343
Stabilization	3,402	--	- 3,402
<b>TOTAL</b>	<b>55,025</b>	<b>95,480</b>	<b>+40,455</b>

<sup>1</sup>Miscellaneous waste values are distributed between "Other Recycling" and "Stabilization" treatment methods at a ratio corresponding with proportions established in Table 7-3 (85.4% and 14.6%, respectively).

TABLE 8-16

PROJECTED NEED FOR OFF-SITE HAZARDOUS WASTE TREATMENT CAPACITY  
EXISTING PERMITTED FACILITIES SCENARIO  
(Waste Reduction)  
(2000)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZAR- DOUS WASTE GENERATION <sup>1</sup> (Tons/Year)	PROJECTED OFF-SITE TREATMENT CAPACITY (Tons/Year)	CAPACITY SURPLUS (+) OR DEFICIT (-) (Tons/Year)
Aqueous Treatment - Organic	3,563	35,000	+31,437
Aqueous Treatment - Metals/Neutralization	2,926	--	- 2,926
Incineration	4,566	--	- 4,566
Solvent Recovery	14,331	60,480	+46,149
Oil Recovery	8,126	--	- 8,126
Other Recycling	7,562	--	- 7,562
Stabilization	2,582	--	- 2,582
<b>TOTAL</b>	<b>43,656</b>	<b>95,480</b>	<b>+51,824</b>

<sup>1</sup>Miscellaneous values are distributed between "Other Recycling" and "Stabilization" at a ratio corresponding with the proportions established in Table 7-3 (85.4% and 14.6%, respectively).

TABLE 8-17

PROJECTED NEED FOR OFF-SITE HAZARDOUS WASTE TREATMENT CAPACITY  
EXISTING AND PENDING PERMITTED FACILITIES SCENARIO  
(No Waste Reduction)  
(2000)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZARD- OUS WASTE GENERATION <sup>1</sup> (Tons/Year)	PROJECTED OFF-SITE TREATMENT CAPACITY (Tons/Year)	CAPACITY SURPLUS (+) OR DEFICIT (-) (Tons/Year)
Aqueous Treatment - Organic	4,533	35,000	+30,467
Aqueous Treatment - Metals/Neutralization	3,738	--	- 3,738
Incineration	5,444	--	- 5,444
Solvent Recovery	18,816	60,480	+41,664
Oil Recovery	10,749	--	-10,749
Other Recycling	8,343	1	- 8,342
Stabilization	3,402	--	- 3,402
<b>TOTAL</b>	<b>55,025</b>	<b>95,481</b>	<b>+40,456</b>

<sup>1</sup>Miscellaneous waste values are distributed between "Other Recycling" and "Stabilization" treatment methods at a ratio corresponding with proportions established in Table 7-3 (85.4% and 14.6%, respectively).

TABLE 8-18

PROJECTED NEED FOR OFF-SITE HAZARDOUS WASTE TREATMENT CAPACITY  
 EXISTING AND PENDING PERMITTED FACILITIES SCENARIO  
 (Waste Reduction)  
 (2000)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZARD- OUS WASTE GENERATION (Tons/Year)	PROJECTED OFF-SITE TREATMENT CAPACITY (Tons/Year)	CAPACITY SURPLUS (+) OR DEFICIT (-) (Tons/Year)
Aqueous Treatment - Organic	3,563	35,000	+31,437
Aqueous Treatment - Metals/Neutralization	2,926	--	- 2,926
Incineration	4,566	--	- 4,566
Solvent Recovery	14,331	60,480	+46,149
Oil Recovery	8,126	--	- 8,126
Other Recycling	7,562	1	- 7,561
Stabilization	2,582	--	- 2,582
<b>TOTAL</b>	<b>43,656</b>	<b>95,481</b>	<b>+51,825</b>

TABLE 8-19

PROJECTED NEED FOR RESIDUAL REPOSITORY CAPACITY  
(No Waste Reduction Scenario)  
(2000)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZAR- DOUS WASTE GENERATION (Tons/Year)	RESIDUE GENERATION MULTIPLIER	PROJECTED QUANTITY OF RESIDUALS
Aqueous Treatment Organic	4,533	0.10	453
Aqueous Treatment Metals/Neutralization	3,738	0.50	1,869
Incineration	5,444	0.10	544
Solvent Recovery	18,816	0.20	3,763
Oil Recovery	10,749	0.20	2,150
Other Recycling	8,343	0.10 <sup>1</sup>	834
Stabilization	3,402	1.20	4,082
<b>TOTAL</b>	<b>55,025</b>		<b>13,695</b>

<sup>1</sup>Residual generation multiplier of 0.10 for "Other Recycling" is based upon research and conclusions drawn by ABAG in preparing the Bay Area Regional Hazardous Waste Management Plan.

TABLE 8-20

PROJECTED NEED FOR RESIDUAL REPOSITORY CAPACITY  
(Waste Reduction Scenario)

GENERALIZED TREATMENT METHOD	CAPACITY REQUIRED TO TREAT PROJECTED HAZARD- OUS WASTE GENERATION (Tons/Year)	RESIDUE GENERATION MULTIPLIER	PROJECTED QUANTITY OF RESIDUALS
Aqueous Treatment Organic	3,563	0.10	356
Aqueous Treatment Metals/Neutralization	2,926	0.50	1,463
Incineration	4,566	0.10	457
Solvent Recovery	14,331	0.20	2,866
Oil Recovery	8,126	0.20	1,625
Other Recycling	7,562	0.10	756
Stabilization	2,582	1.20	3,098
<b>TOTAL</b>	<b>43,656</b>		<b>10,621</b>

TABLE 8-21

**PROJECTED CUMULATIVE NEED FOR RESIDUAL REPOSITORY CAPACITY  
(No Waste Reduction Scenario)  
(1986-2000)**

	EXISTING QUANTITY OF RESIDUALS <sup>1</sup> (1986) (Tons/Year)	PROJECTED QUANTITY OF RESIDUALS (2000) (Tons/Year)	PROJECTED QUANTITY OF RESIDUALS (1986-2000) (Tons/Year)
Aqueous Treatment Organic	243	453	5,220
Aqueous Treatment Metals/Neutralization	1,122	1,869	22,432
Incineration	604	544	8,610
Solvent Recovery	2,258	3,763	45,157
Oil Recovery	1,647	2,150	28,477
Other Recycling	313	834	8,602
Stabilization	2,548	4,082	49,725
<b>TOTAL</b>	<b>8,735</b>	<b>13,695</b>	<b>168,223</b>

<sup>1</sup>Derived from data in Table 7-20 after applying residual generation multipliers in Table 8-19.

TABLE 8-22

**PROJECTED CUMULATIVE NEED FOR RESIDUAL REPOSITORY CAPACITY**  
**(Waste Reduction Scenario)**  
**(1986-2000)**

	EXISTING QUANTITY OF RESIDUALS <sup>1</sup> (1986) (Tons/Year)	PROJECTED QUANTITY OF RESIDUALS (2000) (Tons/Year)	PROJECTED QUANTITY OF RESIDUALS (1986-2000) (Tons/Year)
Aqueous Treatment Organic	243	356	4,492
Aqueous Treatment Metals/Neutralization	1,122	1,463	19,388
Incineration	604	457	7,958
Solvent Recovery	2,258	2,866	38,430
Oil Recovery	1,647	1,625	24,540
Other Recycling	313	756	8,017
Stabilization	2,548	3,098	42,345
<b>TOTAL</b>	<b>8,735</b>	<b>10,621</b>	<b>145,170</b>

<sup>1</sup>Derived from data in Table 7-20 after applying residual generation multipliers in Table 8-19.

# Siting Facilities



## SITING FACILITIES

A principal goal of the Tanner Bill (AB 2948) is to ensure that safe, effective, and economical off-site facilities for the management of hazardous wastes are available when they are needed, and to ensure that these facilities are sited and operated in a manner which protects public health and the environment.

To assure the availability of future facilities, the Bill requires the development of a siting criteria and designation of general areas which may be appropriate for the expansion of existing hazardous waste management facilities or construction of new off-site facilities. This chapter will: (1) provide an overview of the types of facilities that manage hazardous waste, (2) discuss the process which culminated in the formulation of general siting criteria and standards for use in selecting sites for hazardous waste management facilities, (3) discuss the screening process to determine general areas in the County which appear most suitable for the expansion of existing, or siting of new, hazardous waste management facilities, and (4) provide a brief description and mapping of these areas.

### CONTEXT

The following discussion establishes a context for the Siting Facilities Chapter within the overall framework of hazardous waste management facility planning. Issues which are discussed include the role of the Siting Facilities Chapter, the relative risks associated with hazardous waste management facilities, the risk assessment process, facility location decision making, the potential for siting new facilities within San Mateo County, and the State appeal process.

#### 1. Role of the Siting Facilities Chapter

The Siting Facilities Chapter provides a comprehensive guide for the siting of hazardous waste management facilities in San Mateo County. The chapter conforms with State law by including siting criteria and identifying general areas that initially appear suitable for the location of hazardous waste management facilities. The chapter does not mandate or initiate the facility permit process, but rather provides the regulatory framework to guide the review of a facility application. The initial effort to site a new facility falls primarily within the discretion of the private sector and is not the operation of this chapter.

The general areas which appear suitable for the location of facilities primarily involve lands in private ownership. These lands would not be developed with facilities without the consent of the property owner. The only exception to this would be an action involving "eminent domain," whereby private land is acquired by a public agency for the purpose of siting a facility. Though possible, the plan does not currently anticipate eminent domain as a method for locating hazardous waste management facilities in San Mateo County.

## 2. Relative Risks Associated with Hazardous Waste Management Facilities

The facilities which are provided for by the Siting Facilities Chapter involve standard industrial operations which would be carefully controlled and pose risks no greater than many industrial processes. However, the perception of risk is very a real factor to a community and, many times, overshadows the actual risk. For example, a substantial amount of waste classified as "hazardous" by State or federal regulations result from familiar consumer products which are not necessarily exotic or highly dangerous. To illustrate, used paint products, common garden pesticide, motor oil, and many types of solvents used for household cleaning are classified as hazardous waste, yet they would not alarm the average consumer who may have the same substances stored in their home. In fact, most of the hazardous waste generated in San Mateo County which requires off-site treatment is waste oil and used solvents.

Similarly, hazardous wastes are a byproduct of many manufacturing processes found in the industrial and commercial zones of most communities in San Mateo County. While these firms routinely produce, store or treat hazardous waste, they are a customary and accepted part of the community.

The hazardous waste management facilities discussed in the Siting Facilities Chapter involve standard industrial operations and processes for the collection, storage and/or treatment of hazardous wastes. However, as these facilities principally involve the management of hazardous wastes, they are often perceived as inherently posing more of a risk than the accepted industrial facilities in the community. In effect, the perception of risk is often disproportionately placed on proposed hazardous waste management facilities as opposed to existing industrial operations in a community.

As with any type of industrial operation, there is always some degree of risk associated with hazardous waste management facilities. The degree of risk would vary according to several factors, including location, the types of waste on-site, and the waste management technologies involved. However, there is a far greater risk to health and safety if hazardous waste management facilities are not developed, and waste is shipped longer distances, subjected to increased handling and transfer, or disposed of illegally.

## 3. The Risk Assessment Process

Although the Siting Facilities Chapter will be used as an initial basis for determining the suitability of an area, site specific risk assessments will also be required prior to facility approval. A risk assessment involves a comprehensive evaluation of the short and long-term risks associated with the development of a new facility at a specific location in a community. The preparation of a risk assessment is an integral part of the facility permitting process, and may be used at the local level for evaluation of required land use permits.

#### a. Federal and State Requirements

Under Federal and State law, a facility applicant is required to prepare a detailed description of the proposed facility operation, known as an Operations Plan. The Operations Plan must include a discussion of the proposed site and its surrounding area, including geologic and hydrologic characteristics, the physical and chemical properties of the wastes handled, treatment techniques which will be applied, the design and safety features of the facility, proposed training programs, emergency procedures, a closure plan, and other factors which provide a comprehensive understanding of the proposed operation. Among the key purposes of the Operations Plan is to provide the data for use in defining the risks to public health and safety that a proposed facility would pose on the immediate community, such as the impacts resulting from a spill, fugitive release, or explosion.

The Operations Plan, prepared by the applicant in accordance with criteria established by the U.S. Environmental Protection Agency and the State Department of Health Services, becomes a significant part of the State facility permit approval process. More specifically, the State Department of Health Services uses the data contained in the Operations Plan to determine (1) the short and long term risks posed by the proposed facility, and (2) the need for or size of buffer zones and other mitigation measures that may be required to reduce risks to acceptable levels.

#### b. Local Requirements

A local agency may use the data contained in the Operations Plan, in concert with a required environmental review document (e.g., an EIR), to analyze the risks associated with a proposed facility when considering a local land use permit. That process could also result in the establishment of buffer zones and other mitigation measures necessary to reduce risks and avoid significant environmental impacts.

If the risk assessment process reveals that potential risks cannot be adequately mitigated, a proposed site may be disapproved, even though it may be located within a general area that has been designated as potentially suitable for the siting of facilities.

In summary, risk assessments assume an important role in the permitting process as they help decision-makers and the public obtain an accurate understanding of the degree of risks associated with the development of a new facility at a specific location in a community.

#### 4. Facility Location Decision Making

When an application is made for a facility, the relevant local jurisdiction (city or county) maintains local permit approval responsibility. That agency would utilize this Siting Chapter and its own local general plan to guide the decision making process. In addition, other State agencies would concurrently be involved in the permitting process, and be able to provide technical assistance to the local jurisdiction. Such agencies include the State Department of Health Services, State Water

Resources Control Board, the California Air Resources Board, and the Governor's Office of Permit Assistance. In effect, local jurisdictions would be afforded substantial technical expertise to assist in their local decision making process.

#### 5. Potential for Siting New Facilities

Determination of the County's need for new treatment capacity is based on a regional (ABAG) "fair share" formula that involves a comparative examination of the capacity required to treat wastes generated in the County, and the treatment capacity currently available from existing treatment facilities in the County. Because excess treatment capacity currently exists in the County, San Mateo County is meeting its current "fair share" responsibility for hazardous waste management capacity in the region. Accordingly, a San Mateo County jurisdiction is currently not required to approve an application for a new treatment facility. This approach does not affect hazardous waste transfer and storage facilities. These facilities are usually small scale by nature, provide a cost saving benefit to local waste generators, and reduce risk of exposure to surrounding property owners by assurance of proper waste storage and handling.

#### 6. State Appeal Process

The Tanner Bill establishes a State appeal process to consider appeals to local agency land use decisions regarding the siting of new hazardous waste management facilities. According to the statute, an appointed appeal board is established which may not reverse the local land use decision unless a number of findings are made. Such findings include:

- a. That the facility is consistent with the County hazardous waste management plan, if such a plan has been adopted by the County and approved by the State Department of Health Services.
- b. That the facility will be located in an area zoned and designated in the applicable general plan for industrial use.
- c. That the facility will be located in an area which is substantially developed with other industrial uses which generate hazardous waste.
- d. That there is no expressed provision in the local general plan (adopted before 1983) which precludes hazardous waste management facilities.
- e. That reversing the local land use decision is consistent with Statewide and regional hazardous waste management goals and objectives.

#### 7. Emphasis on Waste Reduction

Although this chapter establishes a framework for siting hazardous waste management facilities, the greater emphasis of this Plan is to reduce the need for such facilities through successful waste reduction methods.

## TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

Hazardous waste management facilities are generally designed to meet specific needs and operating criteria. For purposes of analysis, facilities can be grouped into six basic types. These are:

1. Transfer and Storage Facilities
2. Recycling Facilities
3. Treatment Facilities
4. Solidification or Stabilization Facilities
5. Incineration Facilities
6. Residual Repositories

Common to each facility type is above-ground construction with features similar to other industrial or manufacturing facilities. This section will provide a brief description of each facility type, include a summary table of principal operating characteristics (Table 9-1), and present illustrations of generally large scale facilities. It should be noted that the facilities may be considerably smaller than those depicted, as appropriate, to serve local (city) or sub-regional (inter-city) needs. This is especially relevant to transfer and storage facilities and incinerators.

### 1. Transfer and Storage Facilities

Transfer and storage facilities serve as collection depots where wastes can be collected, segregated and stored prior to shipment to a treatment or recycling facility. Transfer stations reduce costs through aggregating wastes into larger volumes before shipment.

Transfer stations generally occupy 1 to 10 acres, and employ 2 to 10 personnel. Annual waste flow may range from 10 to 40,000 tons, involving 6 to 75 trucks per week. Transfer and storage facilities resemble warehouse-style buildings, surrounded by storage tanks and protective dikes. Low volume transfer and storage facilities can be located on small parcels (less than an acre), and developed with only a small warehouse building.

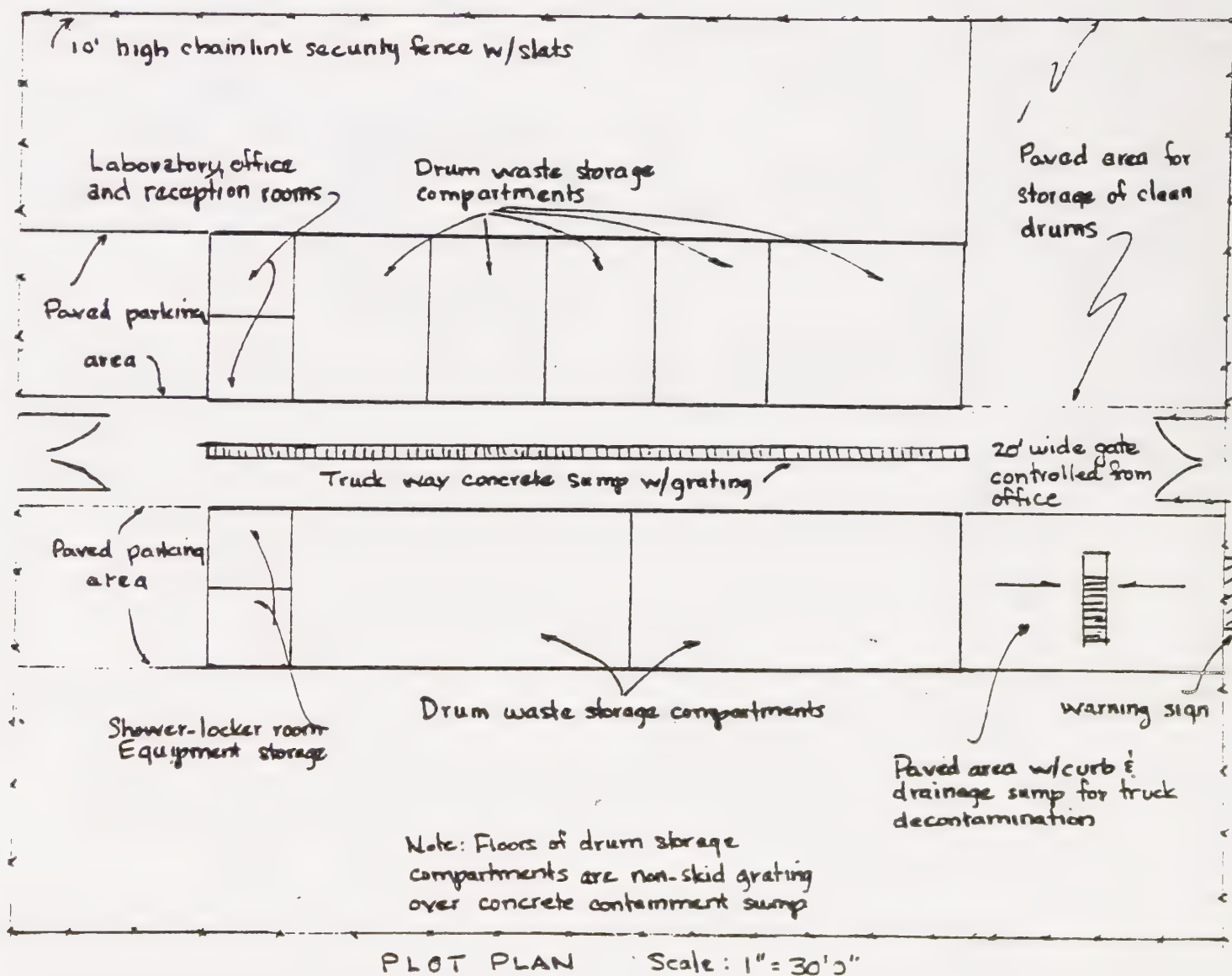
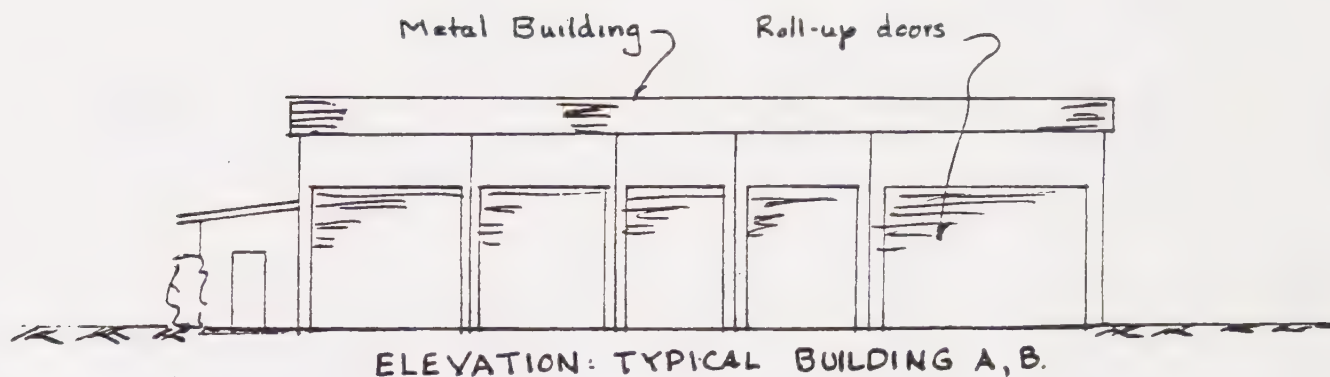
Transfer and storage facilities are usually located in industrial zones within urban areas, near waste generators. However, they may be needed in commercial areas to serve small quantity generators (e.g., auto repair shops, printers, dry cleaners, trade facilities, etc.), or to receive wastes generated by visitor-serving operations (e.g., parks, harbors, marinas) as well as agricultural or timber harvesting operations. An illustration depicting the physical appearance and site plan of a transfer station is included as Figure 9-1.

TABLE 9-1

## CHARACTERISTICS OF FACILITIES

TYPE OF FACILITY	URBAN/RURAL	SIZE IN ACRES	NUMBER OF EMPLOYEES	ANNUAL CAPACITY (Thousands of Tons)	NUMBER OF TRUCK/ VEHICLES PER WEEK	STRUCTURAL CHARACTERISTICS
Transfer and Storage	Urban or Rural	1-10	2-10	10-40	6-75	Warehouse Style Building Storage Tanks Diked Perimeters
Treatment Facilities						
Aqueous/Liquid Organics	Urban	3-30	15-40	10-200	12-230	Surface Impoundments
Recycling/Recovery	Urban	1-10	15-60	10-40	6-75	Aerators
Solidification/ Stabilization	Urban	1-10	5-30	5-100	4-78	Storage Tanks Distillation Towers Industrial Style Buildings
Incineration	Urban or Rural	4-10	2-12	5-70	3-130	Tall Smokestack Storage Tanks Warehouse Style Buildings
Residual Repositories	Generally Rural	50-300	15-25	10-60	9-54	Perimeter of Landscaped Berms Quonset Hut Shaped Buildings

FIGURE 9-1



## TRANSFER AND STORAGE FACILITY

## 2. Recycling Facilities

Recycling facilities accommodate operations which recover liquid organics, distill solvents, and refine oil. Treated solvents and oils may be recycled, blended into fuels, or shipped as industrial raw materials. Residual liquid wastes are usually sent to treatment facilities for further processing.

A typical recycling facility would cover 1 to 10 acres and visually resemble a small petroleum refinery with storage tanks, pipelines and distillation towers. Recycling facilities employ 15 to 60 personnel, and annually process 10 to 40,000 tons of hazardous wastes. Truck traffic to the facility ranges from 6 to 75 vehicles per week commensurate with the size of the facility. Recycling facilities are typically located in industrial zones within urban areas.

## 3. Treatment Facilities

Treatment facilities accommodate operations which render liquid wastes less hazardous through physical, chemical or biological techniques. Processes may reduce, neutralize, destroy or isolate the hazardous wastes. Treatment facilities may require 3 to 30 acres, employ 15 to 40 persons, and handle 10 to 200,000 tons of waste annually. Truck traffic volumes vary with size of the facility, ranging from 15 to 230 tanker truckloads per week.

Treatment facilities are visually similar to municipal sewage treatment plants with surface impoundments, storage tanks, aerators, and industrial-style buildings. These facilities are generally sited in industrial zones within urban areas, near the waste generation sources. An illustration depicting the physical appearance of a treatment facility is included as Figure 9-2.

## 4. Solidification or Stabilization Facilities

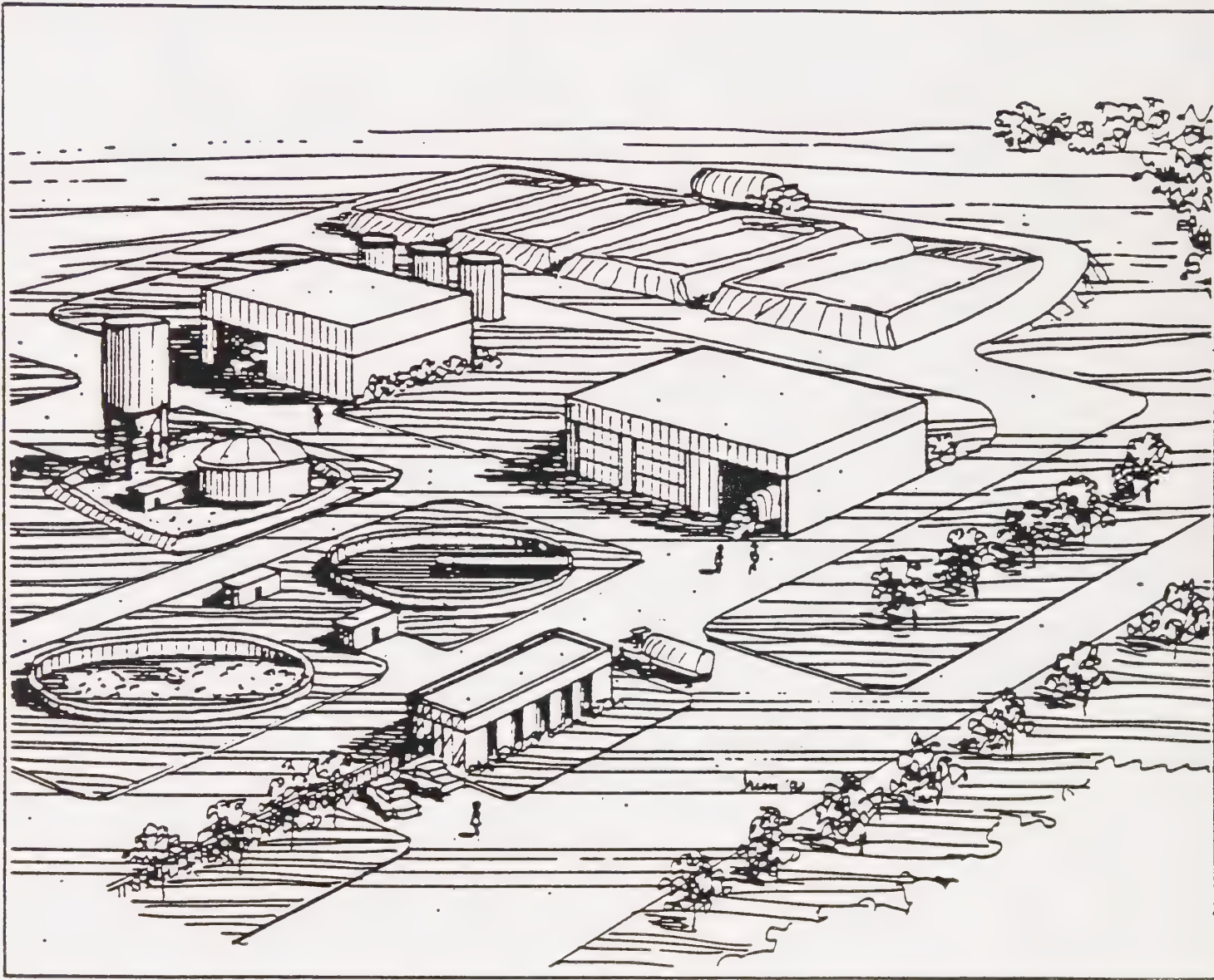
These facilities accommodate operations which solidify or stabilize hazardous wastes that cannot be recycled, treated or destroyed. Techniques involve solidification or encapsulation processes.

Solidification and stabilization facilities resemble industrial buildings with silos for storage of dry chemicals, and warehouse-style buildings with trucks entering to unload wastes. The amount of waste handled annually ranges from 5 to 100,000 tons. Sites vary from 1 to 10 acres with operations employing 5 to 30 personnel. Truck volumes would range from 5 to 78 trucks per week.

## 5. Incineration Facilities

Incineration facilities burn organic liquids and solids that cannot be reclaimed. The actual incinerator may vary in size from a few square feet to massive structures of several hundred square feet. Incinerator facilities occupy sites of 4 to 10 acres, employ 2 to 12 persons, and annually incinerate 5 to 70 tons of hazardous wastes.

FIGURE 9-2



## Aqueous Treatment

Large incinerators, e.g., rotary kilns, resemble large cement-type kilns featuring a tall smokestack, storage tanks, and support buildings. Small incinerators, enclosed by conventional industrial buildings, may occupy less area than a medium sized residence.

Incinerators typically have a high destruction efficiency. However, for the air emissions which do result, meticulous monitoring and compliance with federal, state, and local regulations are required. Incinerators may be located in urban or rural areas. An illustration depicting the physical appearance of an incinerator facility is included as Figure 9-3.

## 6. Residual Repositories

The residual repository is a new facility concept designed to replace the use of landfills for disposal of wastes that cannot be further treated, destroyed or reduced in content.

Residual repositories are above-ground facilities designed to keep residuals dry and retrieveable should future technological advances allow for further treatment or use of the waste. Residual repositories are designed to handle 10,000 to 60,000 tons of waste annually, require a land area of 50 to 300 acres, and employ 15 to 25 persons. Facilities are covered by "quonset hut" shaped movable roofs, over cement foundations. Residual repositories are generally located in rural areas where larger parcels are available. An illustration depicting the physical appearance and interior plan of a residual repository is included as Figure 9-4.

## DEVELOPMENT OF THE SITING CRITERIA

### 1. Background

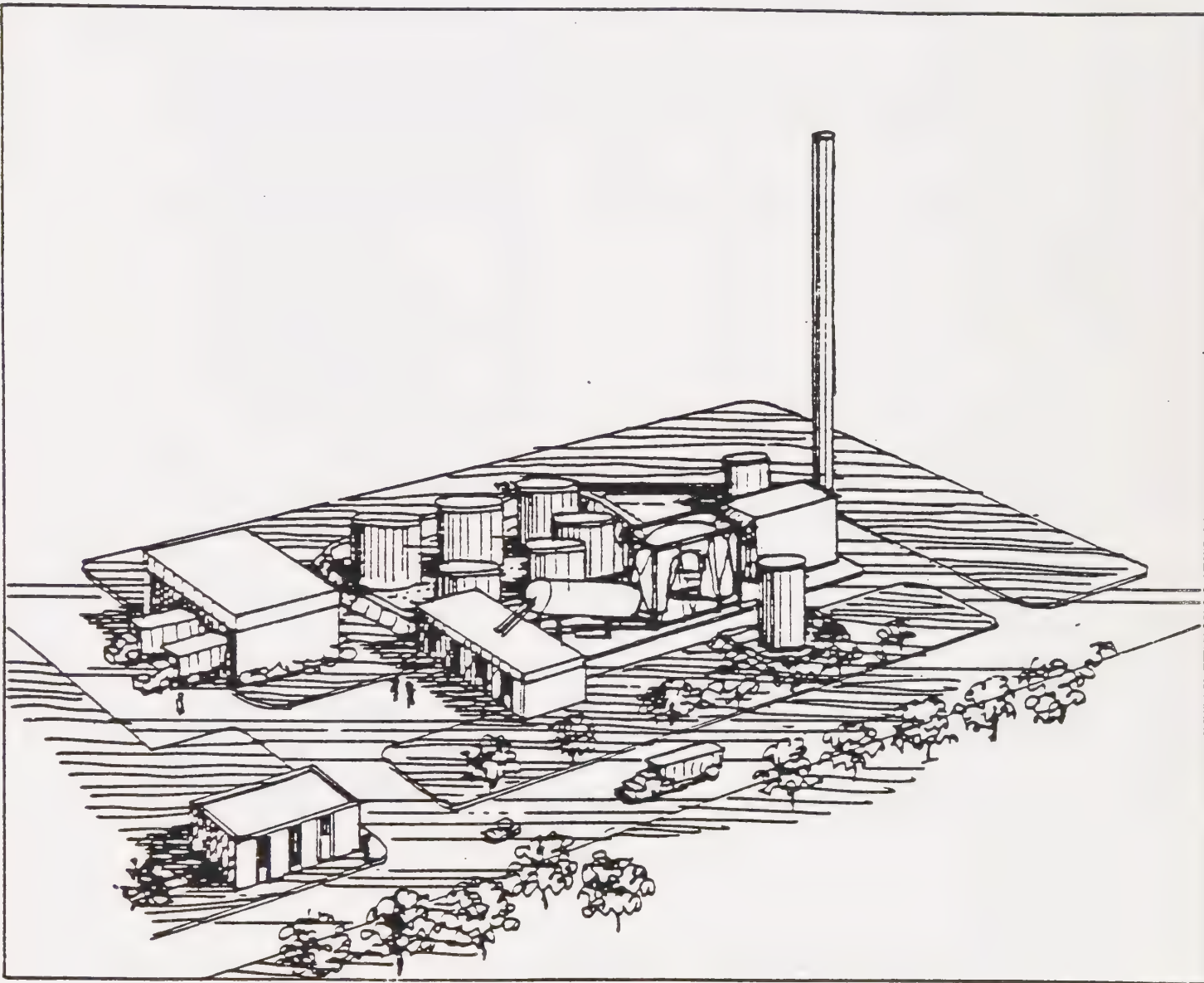
#### a. Legal Authority and Application

An essential provision of the Tanner Bill is the requirement that county Hazardous Waste Management Plans include siting criteria to be used in:

- (1) Selecting general areas in the county that appear suitable for location of future facilities.
- (2) Reviewing future applications for the expansion or major modification of existing or development of new facilities.
- (3) Making findings of consistency with the county Hazardous Waste Management Plan based on conformance with siting criteria.

The siting criteria in this plan will be used as an initial basis for determining the suitability of a site when application is made to construct a hazardous waste management facility. However, extensive site specific need and risk assessments will also be required prior to commencement of comprehensive development review by local, regional and state permitting agencies. In effect, the siting criteria set general parameters with which a project must comply, prior to the more site specific and intensive evaluation process that follows.

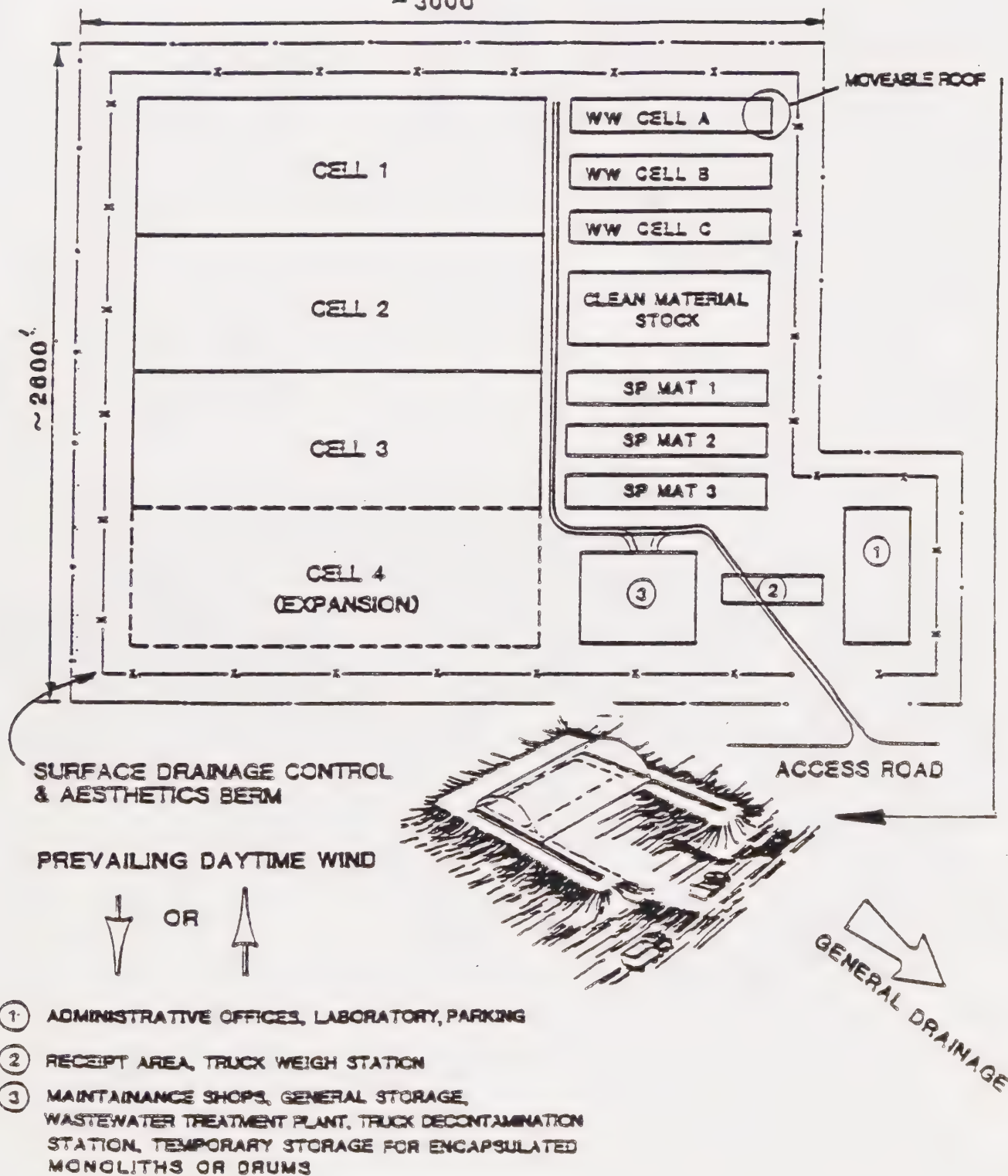
FIGURE 9-3



Rotary Kiln Incineration

FIGURE 9-4

~ 3000



- ① ADMINISTRATIVE OFFICES, LABORATORY, PARKING
- ② RECEIPT AREA, TRUCK WEIGH STATION
- ③ MAINTAINANCE SHOPS, GENERAL STORAGE,  
WASTEWATER TREATMENT PLANT, TRUCK DECONTAMINATION  
STATION, TEMPORARY STORAGE FOR ENCAPSULATED  
MONOLITHS OR DRUMS

## RESIDUALS REPOSITORY

NOTE IN ACTUAL PRACTICE EXTERIOR BERMING  
WOULD BE SHAPED IN PLAN AND ELEVATION  
TO PRESENT A MORE NATURAL APPEARANCE

general parameters with which a project must comply, prior to the more site specific and intensive evaluation process that follows.

The siting criteria apply only to off-site facilities (i.e., facilities which receive wastes transported from other sites). On-site management of hazardous wastes involves a separate regulatory process.

Findings of consistency with the plan are not required for existing off-site facilities when "non-major" modifications are proposed, or the operating permit is being considered for renewal.

b. Objectives

The principal objectives guiding the development of the siting criteria include:

- (1) Protecting public health and safety.
- (2) Protecting the environment including groundwater, surface water, land, air, and sensitive habitats.
- (3) Preparing criteria that will not unreasonably impair the feasibility of establishing new facilities or expanding existing facilities in the County.

c. Source

The siting criteria included in this plan were derived from several sources, including the State Department of Health Services (DHS) and the Association of Bay Area Governments (ABAG). Additional siting requirements were developed to respond to local conditions and concerns. These will be discussed in detail in a subsequent section of this chapter.

d. Format and Style

The siting criteria are divided into four categories of concern, including: (1) environment, (2) public health and safety, (3) general plan, zoning and land uses, and (4) transportation. Siting factors were developed for each of the categories. Each siting factor is accompanied by more specific siting criteria to establish requirements and standards.

The criteria attempt to avoid highly specific, numeric standards. This approach is to facilitate case-by-case flexibility in the review process, i.e., allow the formulation of standards tailored to address local conditions.

As the criteria are intended for use by multiple jurisdictions, terms and standards have been written in a generalized manner to facilitate uniform application. The criteria are intended to provide a starting point for affected agencies to evaluate individual facility requests.

e. Need for Two Sets of Siting Criteria

Two sets of siting criteria were developed, based on the fact that hazardous waste management facilities are generally divided into two categories: residual repositories, and all other facilities (e.g., storage, recycling, treatment, or incineration).

(1) Residual Repositories

Separate siting criteria are required for residual repositories since this type of facility involves greater land areas than other facilities, more extensive buffer zones from residential areas, and maximum soil impermeability conditions.

(2) All Other Facilities

A second set of siting criteria was developed for the other basic types of hazardous waste management facilities which include facilities for: (1) transfer and storage, (2) recovery and recycling, (3) stabilization, solidification, or other treatment technologies, and (4) incineration.

2. Content of the Siting Criteria

The siting criteria are presented as Exhibits 9-1 (All Facilities Except Residual Repositories) and 9-2 (Residual Repositories) at the end of this chapter.

3. Siting Requirements Responding to Local Conditions and Concerns

The siting criteria are derived from the administrative guidelines prepared by the State Department of Health Services. Additional or alternative requirements were developed and incorporated into the siting criteria to respond to local needs and conditions. The following provides a summary description and justification for locally added siting requirements.

a. Sensitive Habitats

The siting criteria prohibit all facilities within sensitive habitat areas, as defined by local general plans.

The San Mateo County General Plan and Local Coastal Program define sensitive habitat areas as areas that include (1) habitats containing or supporting rare and endangered or unique species; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; (6) wildlife refuges and scientific study areas; and (7) important breeding or spawning areas. It is a stated existing County policy to allow only resource dependent uses within sensitive habitat areas (General Plan Policy 1.29 and LCP Policy 7.4). Resource dependent uses which are compatible with the protection of sensitive habitats and require a location on or adjacent to the resource. Examples include fish and wildlife management activities, nature

education and research, trails and scenic overlooks. These provisions prohibit commercial and industrial development, including hazardous waste management facilities in sensitive habitat areas.

b. Steeply Sloped Areas

The siting criteria prohibit all facilities in steeply sloped areas, i.e., areas with slopes of 30% or greater.

It is a stated existing County policy to prohibit all types of development on slopes of 30% or greater (General Plan Policy 15.20 and LCP Policy 9.18).

c. High Landslide Susceptibility

The siting criteria discourage locating all facilities within areas subject to high landslide susceptibility, as defined in local plans.

San Mateo County contains many areas with high susceptibility to landslides and related geotechnical hazards. These are predominantly remote rural areas served by unimproved roads subject to washouts and slides. Extensive grading would be required to mitigate hazardous conditions. It is a stated existing County policy to avoid siting all types of structures in areas subject to geotechnical hazards (General Plan Policy 15.20 and LCP Policy 9.3).

d. Rapid Soil Permeability

The siting criteria discourage locating all facilities within areas with rapid soil permeability.

San Mateo County includes areas which contain soil with high soil permeability ("rapid" or "very rapid" as rated by the U.S. Soil Conservation Service). These are predominantly in the rural coastal area. Accidental release of hazardous wastes into these soils could endanger groundwater supplies, including sources used for potable wells or agricultural operations. Location of hazardous waste management facilities in these areas, therefore, should be avoided.

e. Aquifers

The siting criteria permit only transfer and storage facilities within the mapped boundaries of a known aquifer supplying potable water for public consumption, providing the area is substantially developed with hazardous waste generating businesses.

There are two mapped aquifers providing potable water for domestic use in San Mateo County:

- (1) The 2-mile wide by 9-mile long Daly City Aquifer is located under substantial portions of Daly City, Colma, South San Francisco, and San Bruno. The aquifer contains many municipal wells which supply potable water directly to city water mains.

- (2) The 1- to 2-mile wide by 18-mile long Half Moon Bay Aquifer is located under most of Half Moon Bay and substantial portions of the unincorporated Mid-Coast. The aquifer is a primary source of drinking water, and serves existing and proposed urban development.

It is widely accepted that groundwater contamination is the single largest environmental impact related to hazardous waste treatment or disposal facilities. The Southern California Hazardous Waste Management Project "Siting Manual" recommends that facilities with subsurface storage or treatment be located at least one-half mile away from potential drinking water sources. A Massachusetts statute requires that treatment facilities cannot be located over an aquifer designated as a "sole source aquifer" pursuant to the Safe Drinking Water Act.

Although spill containment technologies are available, siting a hazardous waste treatment or disposal facility over a drinking water aquifer poses a needless risk and is not considered appropriate.

f. Potable Water Supplies (Including Emergency Wells)

The siting criteria may require for all facilities the establishment of a buffer zone which separates the facility site from contact with surface and underground sources of potable water, including emergency wells.

San Mateo County contains a series of emergency wells and reservoirs with potable water. These sources are intended for domestic use should the primary system for distribution of drinking water be disrupted. The intent underlying this siting requirement is to make explicit the County's desire to protect alternative water sources.

g. Residential Zones/Institutional Uses

The siting criteria prohibit all hazardous waste management facilities in residential zoning districts, or on sites developed with institutional uses. Institutional uses include schools, hospitals, cemeteries, or similar facilities.

The siting restriction is intended to explicitly state what is implicit in the State Department of Health Services administrative guidelines.

h. Commercial Zones

The siting criteria permit only hazardous waste transfer and storage facilities in commercial zoning districts. Suitable commercial districts are those which are developed with hazardous waste generating businesses.

It is appropriate to locate transfer and storage facilities in commercial areas developed with hazardous waste generators, e.g., dry

cleaners, machine shops, and auto repair. A transfer station in a commercial area (1) provides for safe and economical handling of locally generated wastes, (2) reduces the risk of exposure to surrounding residential or commercial property owners from open or otherwise inappropriate storage of hazardous waste, and (3) provides greater opportunity for siting necessary household hazardous waste facilities. Since hazardous waste transfer and storage facilities are generally not allowed by existing zoning in commercial areas, their introduction will require a local zoning amendment.

It is not appropriate to locate treatment and other high volume facilities in commercial areas. Commercial zoning districts in San Mateo County do not allow manufacturing or similar industrial uses; these areas are designated for trades and service businesses.

The Guidelines for the Preparation of Hazardous Waste Management Plans state that hazardous waste treatment facilities are basically industrial facilities; and that most facilities will be similar to any other manufacturing facility or industrial plant. The Guidelines further state that it is appropriate that facilities be sited in areas where light and/or heavy industry are appropriate. In addition, State Health and Safety Code Section 25199.11 establishes approval criteria for hazardous waste facilities under appeal, among which is that the project is located in an area zoned for industrial use.

#### i. Industrial Zones

The siting criteria allow all types of facilities in industrial zoning districts which are either vacant or developed with industrial uses. However, incinerator facilities must maintain a 2,000-foot buffer zone from residential zoning districts or institutional development, and shall be located in industrial areas predominantly developed with hazardous waste generating firms or undeveloped. The 2,000-foot buffer zone may be adjusted based upon a risk assessment performed during the permitting process.

Though allowed by the siting criteria, areas considered to be of lower suitability for treatment facilities are those within 500 feet of residential zoning districts or institutional development, or not predominantly developed with hazardous waste generators.

#### 2,000-Foot Buffer for Incinerators

It is appropriate that incinerator facilities maintain a 2,000+-foot buffer from residential/institutional development.

Urban San Mateo County is predominantly characterized by densely developed land uses concentrated along the narrow Bayside plain. In this generally built out area, residential, commercial and industrial land uses are located in close proximity to one another. When siting hazardous waste facilities in this setting, extra care must be taken to minimize health and safety risks to nearby residences from fugitive air emissions, fires, or explosions.

Fires and explosions at hazardous waste facilities most frequently involve ignitable or reactive wastes on the site. Incinerators present the potential for greater accident impacts than other facilities due to the composition of the waste stream and a larger accident impact area. If incinerator temperatures or burn rates are not carefully adjusted, explosions or hazardous emissions may result. Establishing buffer zones can prevent injury, death and property destruction.

The State Health and Safety Code (Section 25202.5) requires that hazardous waste disposal facilities be located at least  $\pm 2,000$  feet from residences. Review of the literature indicates that a 2,000-foot buffer area from residences is also appropriate for incinerator facilities. New Jersey law, for example, requires that all hazardous waste facilities be at least 2,000 feet from occupied structures and that incinerator facilities be 2,640 feet (half mile) away to ensure public safety. New York siting laws recommend 2,640 feet (half mile) between all hazardous waste facilities and residences. The Southern California Hazardous Waste Management Project "Siting Manual" establishes 2,000 feet as the minimum separation distance between incinerators and residences.

#### 500-Foot Zone of Lower Suitability

The 500-foot zone of lower suitability for other treatment facilities is intended to assure an extra margin of safety for industrial areas that adjoin residential zones. The measure generally corresponds with the length of a standard urban block in San Mateo County. Although facilities are not prohibited within 500 feet of a residential area, it is appropriate to discourage their location there.

#### Non-Industrial Development

There exist certain industrial zones which are developed with non-industrial uses, e.g., hotels restaurants, car rental agencies, etc. Siting facilities in these areas are not considered appropriate.

#### j. Agriculture, Timber Production, and Open Space Zones

The siting criteria allow only low volume transfer and storage facilities in agriculture, timber production, and open space zoning districts.

Residual repositories may be allowed only if an overriding public need is demonstrated and local land use amendments are secured.

Transfer and storage facilities may be necessary in select rural areas to receive wastes from agriculture, timber harvesting, and related open space uses. Open space and agricultural zoning districts are areas in which the principal permitted uses are agriculture, timber production, or those uses consistent with the definition of open space (as defined in the California Open Space Lands Act of 1972).

It is stated existing County policy to protect designated agricultural land for agricultural purposes. Specifically, the certified County Local Coastal Program allows a very limited range of land uses on designated agricultural land; and waste management facilities are not a permitted use (LCP Policies 5.5-5.6).

k. Recreational, Cultural, or Aesthetic Areas

The siting criteria allow low volume transfer and storage facilities in recreational, cultural, or aesthetic areas to serve visitors, workers, or residents of these areas; however, such facilities are prohibited in designated State Scenic Corridors.

This requirement is consistent with the County General Plan policies established to protect areas of highest scenic value.

l. Prime Agricultural Land

The siting criteria prohibit all facilities on prime agricultural land unless an overriding public need is demonstrated and local land use amendments are secured.

The California Coastal Act, County General Plan and Local Coastal Program place a high value on protecting prime agricultural land. It is existing stated policy to allow only agriculture and agricultural related uses on prime agricultural land, and waste management facilities are not a permitted use (LCP Policies 5.5 and 5.6, and Zoning Ordinance Section 6352 and 6353).

m. Airport Approach/Clear Zones

The siting criteria prohibit all facilities in airport approach/clear zones.

Approach/clear zones are areas at the end of runways where aircraft make emergency landings. These zones are designated by the Federal Aviation Authority (FAA) and/or the San Mateo County Airport Land Use Commission (ALUC), and are required to be kept free of all structures.

n. Airport Passenger Serving Areas

The siting criteria prohibit all facilities in passenger serving areas of commercial airports. Passenger serving areas include the terminal and other on-site passenger serving facilities.

San Mateo County hosts San Francisco International Airport, one of the busiest commercial airports in the country, serving thousands of passengers each day. The passenger serving areas at San Francisco International Airport are not considered suitable for hazardous waste management facilities.

## DEVELOPMENT AND EVALUATION OF THE SCREENING MAP

Each land use and environmental factor associated with the siting criteria was then mapped using multi-color representations applied directly to a County base map. Mapped siting factors include the location of residential, commercial, and industrial zones, major transportation routes, and environmental factors such as flood hazard areas and sensitive habitats. The screening map is included in the Appendix, and on file with the San Mateo County Department of Environmental Management, Planning Division.

Upon completion of the screening map, an evaluation process was necessary to determine which general areas are potentially suitable for siting new facilities. The evaluation process involved three basic steps:

1. Determining areas which are unsuitable for some or all facilities.
2. Determining areas which are potentially suitable for some or all facilities.
3. Determining areas which are potentially suitable for some or all facilities based on the developed siting criteria, but are impractical or infeasible due to site conditions, e.g., remote access and lack of infrastructure.

These determinations were based upon the requirements associated with the siting criteria. Because requirements may vary with the type of facility, the next step in the process was to further define areas which were considered potentially suitable for some or all facilities (2 above). This involved:

1. Determining areas potentially suitable for treatment, transfer and storage, or recycling facilities, including incinerators.
2. Determining areas potentially suitable for treatment, transfer and storage, or recycling facilities, excluding incinerators.
3. Determining areas potentially suitable for residual repositories.
4. Determining areas potentially suitable for transfer and storage facilities only.

Areas which were determined suitable for facilities based on the siting criteria were further refined to recognize that some sites are more or less suitable than others due to the specific mix of conditions present on the site. For example, an industrial zone adjacent to a residential zone is less suitable for facilities than an industrial zone buffered by non-residential land uses. Also, an industrial zone developed with a substantial number of hazardous waste generating firms is more suitable for facilities than an industrial zone with fewer waste generating firms. Because of such situations, it was necessary to assign a priority to certain site characteristics and develop measures of relative suitability. The approach taken was to consider avoidance of population concentrations (residential and institutional) as the highest priority when considering constraints, and proximity to industrial zones, major transportation routes, and the waste generation stream as

the highest priority when considering opportunities. Based on this approach, areas deemed suitable for facilities could be designated as having high suitability or low suitability.

In a process involving judgment determinations, a composite summary map was produced which indicated general areas in the County which were of high or low suitability for hazardous waste management facilities.

## **FACILITY SITING MAP FOR SAN MATEO COUNTY**

The areas which appear suitable for facilities are identified on the Facility Siting Map for San Mateo County (Map 9-1). The Facility Siting Map is a graphic representation of the siting criteria when applied to San Mateo County. The map is intended to assist facility proponents and inform the general public of potentially suitable areas within the County to site hazardous waste management facilities. Though suitable areas are shown on the map, actual facility location must conform with the siting criteria contained in the plan.

### **1. Organization and Format**

For the types of facilities which are suitable in San Mateo County, the Facility Siting Map is divided into five basic categories:

- a. Areas with moderate to high suitability potential for hazardous waste treatment, transfer and storage, or recycling facilities, including incinerators.
- b. Areas with moderate to high suitability potential for hazardous waste treatment, transfer and storage, or recycling facilities, excluding incinerators.
- c. Areas with low suitability potential for hazardous waste treatment, transfer and storage, or recycling facilities, excluding incinerators.
- d. Areas potentially suitable for hazardous waste transfer and storage facilities only.
- e. Areas unsuitable for all hazardous waste management facilities, or areas otherwise suitable but impractical or infeasible due to lack of access or infrastructure.

### **2. Content and Conclusions**

#### **a. Suitable Areas for Facilities (Except Residual Repositories)**

The following is a generalized description of those areas shown on the facility siting map as potentially suitable for hazardous waste management facilities.

(1) Areas with Moderate to High Suitability for Treatment, Transfer and Storage, or Recycling Facilities, Including Incinerators

The areas considered to have higher suitability for treatment, transfer and storage, or recycling facilities, including incinerators, are in industrial zones on the Bayside, developed predominantly with waste generators, close to major transportation corridors, and most distant from residential zones or institutional uses.

(2) Areas With Moderate to High Suitability for Treatment, Transfer and Storage, Recycling, Excluding Incinerators

The areas considered to have higher suitability for treatment, transfer and storage, or recycling facilities, excluding incinerators, are in industrial zones on the Bayside, developed primarily with waste generators, close to major transportation corridors, and not adjacent to residential zones or institutional uses.

(3) Areas With Low Suitability for Treatment, Transfer and Storage, or Recycling, Facilities, Excluding Incinerators

The areas considered to have lower suitability for all types of treatment, transfer and storage, or recycling facilities, excluding incinerators, are in industrial zones on the Bayside, and near waste generators and major transportation corridors. These areas offer less suitability, because they are (1) often adjacent to residential zones or institutional uses, thereby lowering their suitability for facilities, or (2) are generally developed with a mix of industrial uses, of which waste generating firms do not appear to be the predominate constituent.

(4) Areas Considered Suitable for Transfer and Storage Facilities Only

Areas considered suitable for transfer and storage facilities only, include: commercial zones developed with hazardous waste generating businesses and select recreation and open space areas throughout the County. Only low volume facilities could be developed outside of the commercial zones to collect waste generated by land uses such as marinas, parks, and agricultural or timber harvesting operations which are generally in locations remote from commercial and industrial areas.

b. Suitable Areas for Residual Repositories

Due to geologic constraints present in San Mateo County, the Facility Siting Map does not designate suitable areas for residual repositories. Should an applicant demonstrate that a suitable site exists, the Map could be amended to reflect this.

The siting criteria requires that residual repositories conform with State Water Resources Control Board permitting regulations. Such regulations prohibit the siting of residual repositories in areas with a natural permeability of greater than  $1 \times 10^{-7}$  cm/sec (CAC, Title 23, Section 2531), unless an alternative standard is approved by the Board based on a stated set of findings (CAC, Title 23, Section 2510).

No documentation is available which establishes that the soil porosity characteristics required by the criteria exist in San Mateo County. The County Geologist, after reviewing the technical literature which is available, concluded that it is "extremely doubtful" that a site exhibiting natural underlying stratum with permeability under  $1 \times 10^{-7}$  cm/sec exists in San Mateo County.

## EXHIBIT 9.1

### CRITERIA FOR SITING NEW, OR EXPANDING EXISTING OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES, EXCEPTING RESIDUAL REPOSITORIES

The following criteria shall be used as a basis for determining the suitability of a site when locating off-site hazardous waste management facilities. The criteria apply to all off-site facilities, except residual repositories, which includes: (1) transfer or storage facilities, (2) recovery, recycling, or other treatment facilities, and (3) incineration facilities. Evaluation against the criteria is to be based upon the best available information, including maps and publications from federal, state, and local governmental agencies. The criteria do not apply to the siting of on-site hazardous waste management facilities, or existing off-site facilities requesting "non-major" modifications or operating permit renewal.

#### SITING FACTORS

##### 1. Environmental Criteria

###### a. Seismic<sup>1</sup>

No facilities shall be located within 200 feet of an active or recently active fault.

###### b. Flood Hazards

Facilities should be discouraged from locating in flood hazard areas unless protected by engineered solutions to mitigate potential adverse impacts. Flood hazard areas include areas subject to 100 year floods and areas subject to dam or levee failures, tsunamis, seiches, and storm surges.

###### c. Wetlands

No facilities shall be located in wetlands. Wetlands include salt-water, freshwater, and brackish marshes, swamps and bogs inundated by surface or groundwater with a frequency to support, under normal circumstances, a prevalence of vegetative or aquatic life which requires saturated soil conditions for growth and reproduction, as defined in adopted local, regional, state, or federal plans.

###### d. Habitat of Endangered Species

No facilities shall be located within critical habitat areas, as defined or designated in adopted local general plans, or related state or federal policy documents.

e. Sensitive Habitats

No facilities shall be located within sensitive habitat areas, as defined or designated in adopted local general plans, or related state or federal policy documents. Sensitive habitat areas include: (1) habitats containing or supporting rare or unique species; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; (6) wildlife refuges, reserves, and scientific study areas; and (7) important nesting, feeding or spawning areas.

f. Steeply Sloped Areas

No facilities shall be located on slopes of 30% or greater.

g. High Landslide Susceptibility/Slope Stability/Subsidence/Liquefaction

Facilities should be discouraged from locating in areas subject to high landslide susceptibility. Facilities located within areas exhibiting unstable soil conditions shall have engineered design features to assure structural stability. Such areas include areas subject to liquefaction and subsidence.

h. Rapid Soil Permeability and High Groundwater Areas

Facilities should be discouraged from locating in rapid soil permeability and high groundwater areas. Facilities located in these areas shall have engineered structural design features, including spill containment and monitoring devices capable of withstanding geologic or soil failures which may arise.

i. Aquifers

Treatment, recycling or incinerator facilities shall not be located within mapped boundaries of a known aquifer providing potable water for public consumption. Transfer and storage facilities may be allowed within a mapped aquifer boundary if the area is substantially developed with hazardous waste generating businesses. If located in these areas, transfer and storage facilities shall provide properly engineered spill containment features, inspection measures and other environmental protection controls.

j. Aquifer Recharge Areas

Facilities should be discouraged from being located in areas known or suspected to be a principal recharge zone for a regional aquifer, as defined in local, regional or state plans. If located in these areas, facilities shall provide properly engineered spill containment features, inspection measures and other environmental protection controls.

k. Potable Water Supplies (Including Emergency Wells)

Facilities may require the establishment of a buffer zone which separates the site from contact with surface and underground sources of potable water, including emergency wells. The need or size of the buffer zone shall be determined by the local permitting agency and the State Department of Health Services, pending a detailed risk assessment of the geohydrologic characteristics of the site and surrounding area.

l. Non-Attainment Air Areas<sup>2</sup>

Facilities should not be precluded from siting in non-attainment air areas unless risk assessments performed as a part of the permitting process show that emissions will significantly contribute to non-attainment of standards and that such emissions cannot be mitigated. Risk assessments shall consider the physical and chemical characteristics of the specific types of wastes that will be handled and the design features of the facility.

m. PSD Air Areas<sup>3</sup>

Transfer and storage facilities can be located in PSD areas, if they are necessary to also handle potentially hazardous wastes generated by visitors or residents in recreational or cultural facilities areas which are in the PSD zone. Treatment facilities can be established in PSD areas unless an analysis for a specific proposed facility shows that air emissions cannot be adequately mitigated. These facilities may not be located near or within a public park, wilderness area, memorial park, or other similarly designated area.

2. Health and Safety Criteria

a. Distance from Residents

Facilities may require the establishment of a buffer zone to protect residential areas, areas designated for future residential development, and other sensitive areas from adverse impacts associated with the proposed facility. The need for or size of a buffer zone shall be determined by a risk assessment performed during the permitting process for an individual facility. The risk assessment will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled, and the environment of the area including hydrological, geological, meteorological and geographical (e.g., proximity to evacuation routes, hazardous material response facilities, etc.) considerations.

b. Distance from Immobile Populations

Facilities may require the establishment of a buffer zone which separates the site from institutional type uses that house or serve immobile populations, such as child care facilities, schools, hospitals, convalescent homes and prisons. The need for or size of a

buffer zone shall be determined by a risk assessment performed during the permitting process for an individual facility. The risk assessment will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled, the proximity to immobile populations, and the environment of the area including hydrological, geological, meteorological and geographical (e.g., proximity to evacuation routes, hazardous material response facilities, etc.) considerations.

c. Distance from Public Assembly Areas/Structures

Facilities located in proximity to public assembly areas or structures, i.e., locations where large numbers of people gather, may require the establishment of a buffer zone. The need for or size of a buffer zone shall be determined by a risk assessment performed during the permitting process for an individual facility. The risk assessment will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled, and the environment of the area including hydrological, geological, meteorological and geographical (e.g., proximity to evacuation routes, hazardous material response facilities, etc.) considerations.

d. Emergency Services and Utilities

Facilities must have sufficient emergency services and utilities which are readily available. Emergency services and utilities include water, sewer and police, fire, and emergency medical, and hazardous materials response. Self-sufficient on-site services shall be provided when existing water, sewer, and emergency services are not adequate.

3. Zoning and Land Use Criteria

a. Residential Zones/Institutional Uses

Facilities shall not be located in residential zoning districts, or on sites developed with institutional uses. Institutional uses include, but are not limited to, schools, hospitals, cemeteries, and similar facilities.

b. Commercial Zones

Treatment, recycling, or incinerator facilities shall not be located in commercial zoning districts. Transfer and storage facilities may be allowed in commercial zoning districts which are developed with hazardous waste generating businesses, pending risk/need assessments and engineered solutions.

c. Industrial and Special Zones

Facilities shall be located within industrial zoning districts which are either developed with industrial uses or undeveloped, pending risk/need assessments and engineered solutions. Areas of moderate to

high suitability are those industrial zones either undeveloped or predominantly developed with hazardous waste generators, close to major transportation corridors, and most distant from residential zones or institutional uses. Areas of low suitability are those industrial zones which are not predominantly developed with hazardous waste generators, or are within 500 feet of residential zones or institutional uses. Incinerator facilities may only be located in areas of higher suitability, and must maintain a 2,000-foot buffer zone from residential zoning districts or sites developed with institutional uses. The 2,000-foot buffer zone may be increased or decreased based upon a risk assessment performed during the permitting process that establishes the necessary buffer zone to protect present and future public health and safety.

Facilities may also be located in specially zoned areas for hazardous waste management facilities. Specially zoned areas include areas which may be rezoned for development of hazardous waste management facilities.

d. Agriculture, Timber Production, or Open Space Zones

Treatment facilities may not be located in agriculture, timber production, or open space zoning districts, i.e., districts in which the principal permitted uses are agriculture, timber production or those uses consistent with the definition of open space (as defined in the California Open Space Lands Act of 1972). Low volume transfer and storage facilities may be allowed in agriculture, timber production, or open space zoning districts, if necessary to handle hazardous wastes generated by agricultural, timber production, or related rural operations, provided that the facility is not located on prime agricultural land and is not within a designated recreational, cultural or aesthetic area.

e. Recreational, Cultural or Aesthetic Areas

Treatment facilities may not be located in recreational, cultural or aesthetic areas identified in local general plans. Low volume transfer and storage facilities may be allowed in these areas if necessary to handle hazardous wastes generated by their visitors, workers or residents, providing that the facility is not located in a designated State Scenic Corridor. Recreational areas include, but are not limited to, public parks, designated community recreation sites, and beaches. Cultural areas include sites or structures of significant cultural, historic or archaeological interest. Aesthetic areas include scenic roads and associated viewsheds specifically designated in local, state or federal plans. No facilities shall be located in State Scenic Corridors, identified in adopted local, regional or state plans.

f. Prime Agricultural Lands

No facilities shall be located on prime agricultural land unless an overriding public need is demonstrated and local land use amendments are secured.

g. Airport Approach/Clear Zones

No facilities shall be located within designated airport approach/clear zones, as defined by the Federal Aviation Authority (FAA) or Airport Land Use Commission (ALUC).

h. Airport Passenger Serving Areas

No facility shall be located in passenger serving areas of commercial airports. Passenger serving areas include the terminal and other on-site passenger service facilities.

i. Mineral Resource Areas

No facilities shall be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.

j. Military Lands

Military land shall not be considered for establishment of public hazardous waste management facilities.

4. Transportation Criteria

a. Proximity to Waste Generation Stream

Facilities should be located close to waste generation sources in order to minimize transportation risks.

b. Proximity to Major Transport Routes

Facilities should be located in areas that minimize distances to major transportation routes designed to accommodate heavy vehicles. Haul routes leading to major transportation routes should consist of improved public roads demonstrated to be safe with regard to road design and construction. Additionally, haul routes should not pass through residential neighborhoods and should minimize frontages in other areas.

## FOOTNOTES

- <sup>1</sup> Seismic. This criterion is established by California Administrative Code (CAC), Title 22, Section 66391(a)(11)A(1) and (2).
- <sup>2</sup> Non-Attainment Air Areas are those areas in which one or more of the critical air pollutants exceeds the National Ambient Air Standards and have not achieved standards required by the Federal Clean Air Act.
- <sup>3</sup> Prevention of Significant Deterioration (PSD). PSD areas are areas which meet ambient air standards of the Clean Air Act, and should therefore be protected from significant deterioration.

## EXHIBIT 9.2

### CRITERIA FOR SITING NEW OFF-SITE HAZARDOUS WASTE RESIDUAL REPOSITORIES

The following criteria shall be used as a basis for determining the suitability of a site when locating off-site hazardous waste residual repositories.

Evaluation against the criteria is to be based upon the best available information, including maps and publications from federal, state, and local governmental agencies. The criteria do not apply to the siting of on-site hazardous waste management facilities.

#### SITING FACTORS

##### 1. Environmental Criteria

###### a. Seismic<sup>1</sup>

No residual repositories shall be located within 200 feet of an active or recently active fault.

###### b. Flood Hazards

No residual repositories shall be located in areas subject to 100 year floods and areas subject to dam or levee failures, tsunamis, seiches, and storm surges.

###### c. Wetlands

No residual repositories shall be located in wetlands. Wetlands include saltwater, freshwater, brackish marshes, and swamps and bogs inundated by surface or groundwater with a frequency to support, under normal circumstances, a prevalence of vegetative or aquatic life which requires saturated soil conditions for growth and reproduction as defined in adopted local, regional, state or federal plans.

###### d. Habitat of Endangered Species

No residual repositories shall be located within critical habitat areas as defined in adopted local general plans, or related state or federal policy documents.

###### e. Sensitive Habitats

No residual repositories shall be located within sensitive habitat areas as defined in adopted local general plans, or related state or federal policy documents. Sensitive habitat areas include: (1) habitats containing or supporting rare or unique species; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; (6) wildlife refuges, reserves, and scientific study areas; and (7) important nesting, feeding or spawning areas.

f. Steeply Sloped Areas

Residual repositories shall not be located on slopes of 30% or greater.

g. High Landslide Susceptibility/Slope Stability/Subsidence/Liquefaction

Residual repositories should be discouraged from locating in areas subject to high landslide susceptibility. Residual repositories located within areas exhibiting unstable soil conditions shall have engineered design features to assure structural stability. Such areas include areas subject to liquefaction and subsidence.

h. Rapid Soil Permeability and High Groundwater Areas

Residual repositories should be discouraged from locating in rapid soil permeability and high groundwater areas. Residual repositories located in these areas shall meet soils and depth to groundwater siting requirements of the State Water Resources Control Board.

i. Aquifers

No residual repositories shall be located within mapped boundaries of a known aquifer providing potable water for public consumption.

j. Aquifer Recharge Areas

Residual repositories shall not be located within areas known or suspected to be supplying principal recharge to a regional aquifer as defined in adopted local, regional or state plans.

k. Potable Water Supplies (Including Emergency Wells)

Residual repositories may require the establishment of a buffer zone which separates the site from contact with surface and underground sources of potable water, including emergency wells. The need or size of the buffer zone shall be determined by the local permitting agency and the State Department of Health Services, pending a detailed risk assessment of the geohydrologic characteristics of the site and surrounding area.

l. Non-Attainment Air Areas<sup>2</sup>

Residual repositories should not be precluded from siting in non-attainment air areas unless risk assessments performed as a part of the permitting process show that emissions will significantly contribute to non-attainment of standards and that such emissions cannot be mitigated. Risk assessments shall consider the physical and chemical characteristics of the specific types of wastes that will be handled and the design features of the facility.

m. PSD<sup>3</sup> Air Areas

Residual repositories may be located within PSD areas if air emissions can be adequately mitigated and if the site is not near or within a public park, wilderness area, memorial park or similarly designated area.

2. Health and Safety Criteria

a. Distance from Residents<sup>4</sup>

A buffer zone of 2,000 feet from existing or planned residential areas is required for any hazardous waste residual repository, unless a risk assessment demonstrates to the local permitting agency and the State Department of Health Services that a 2,000-foot buffer zone is not required to protect public health and safety.

b. Distance from Immobile Populations

Residual repositories may require the establishment of a buffer zone separating the site from institutional type uses that house or serve immobile populations such as child care facilities, schools, hospitals, convalescent homes and prisons. The need or size of the buffer zone shall be determined by a risk assessment which will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled, the proximity to immobile populations, and the environment of the area including hydrological, geological, meteorological and geographical (e.g., proximity to evacuation routes, hazardous material response facilities, etc.) considerations.

c. Distance from Public Assembly Areas/Structures

Residual repositories located in proximity to public assembly areas or structures, i.e., locations where large numbers of people gather, may require the establishment of a buffer zone. The need or size of the buffer zone shall be determined by a risk assessment which will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled, and the environment of the area including hydrological, geological, geographical (e.g., proximity to evacuation routes, hazardous material response facilities, etc.), and atmospheric considerations.

d. Emergency Services and Utilities

Residual repositories must have sufficient emergency services and utilities which are readily available. Emergency services and utilities include water, sewer, police, fire, and emergency medical, and hazardous materials response. Self-sufficient on-site services shall be provided when existing water, sewer, and emergency services are not adequate.

### 3. Zoning and Land Use Criteria

#### a. Residential Zones/Institutional Uses

Residual repositories shall not be located in residential zoning districts, or on sites developed with institutional uses. Institutional uses include, but are not limited to, schools, hospitals, cemeteries, and similar facilities.

#### b. Commercial Zones

Residual repositories shall not be located in commercial zoning districts.

#### c. Industrial and Special Zones

Residual repositories shall be located in industrial zoning districts which are either developed with industrial uses or undeveloped, pending risk/need assessments and engineered solutions.

Residual repositories may also be located in specially zoned areas for hazardous waste management facilities. Specially zoned areas include areas which may be rezoned for development of hazardous waste management facilities.

#### d. Agriculture, Timber Production, or Open Space Zones

Residual repositories shall not be located in agriculture, timber production, or open space zoning districts unless an overriding public need is demonstrated and local land use amendments are secured.

#### e. Recreational, Cultural or Aesthetic Areas

Residual repositories shall not be located in areas of recreational, cultural or aesthetic value. Recreational areas include, but are not limited to, public parks, designated community recreation sites, and beaches. Cultural areas include sites or structures of significant cultural, historic or archaeological interest. Aesthetic areas include scenic roads and associated viewsheds specifically designated in local, state or federal plans.

#### f. Prime Agricultural Lands

No residual repositories shall be located on prime agricultural land unless an overriding public need is demonstrated and local land use amendments are secured.

#### g. Airport Approach/Clear Zones

Residual repositories shall not be located within designated airport approach/clear zones, as defined by the Federal Aviation Authority (FAA) or Airport Land Use Commission (ALUC).

h. Airport Passenger Serving Areas

Residual repositories shall not be located in passenger serving areas of commercial airports. Passenger serving areas include the terminal and other on-site passenger service facilities.

i. Mineral Resource Areas

No facilities shall be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.

j. Military Lands

Military land shall not be considered for establishment of public hazardous waste management facilities.

4. Transportation Criteria

a. Proximity to Waste Generation Stream

Residual repositories may be located more distant from waste generation sources than other facilities because of their need for larger land areas. They should have good access to major transportation routes.

b. Proximity to Major Transport Routes

Residual repositories should be located in areas that minimize distances to major transportation routes designed to accommodate heavy vehicles. Haul routes leading to major transportation routes should not pass through residential neighborhoods, should minimize residential frontages in other areas, and should be demonstrated to be safe with regard to road design and construction, accident rates and capacity.

## FOOTNOTES

- <sup>1</sup> Seismic. This criterion is established by California Administrative Code (CAC), Title 22, Section 66391(a)(11)A(1) and (2).
- <sup>2</sup> Non-Attainment Air Areas are those areas in which one or more of the critical air pollutants exceeds the National Ambient Air Standards and have not achieved standards required by the Federal Clean Air Act.
- <sup>3</sup> Prevention of Significant Deterioration (PSD). PSD areas are those which meet ambient air standards of the Clean Air Act, and should therefore be protected from significant deterioration.
- <sup>4</sup> Distance from Residents. This criterion is derived from Health and Safety Code, Section 25202.5(b) and (d)).

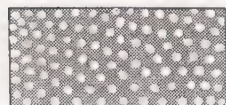
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## FACILITY SITING

### *Potential Suitability*



Areas with moderate to high suitability for hazardous waste treatment, transfer and storage, or recycling facilities, including incinerators.<sup>1</sup>



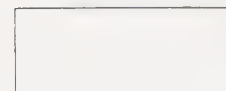
Areas with moderate to high suitability for hazardous waste treatment, transfer and storage, or recycling facilities, excluding incinerators.<sup>1</sup>



Areas with low suitability for hazardous waste treatment, transfer and storage, or recycling facilities, excluding incinerators.<sup>1</sup>



Areas suitable for only hazardous waste transfer and storage facilities.<sup>1</sup> ( **P** denotes for park use only)

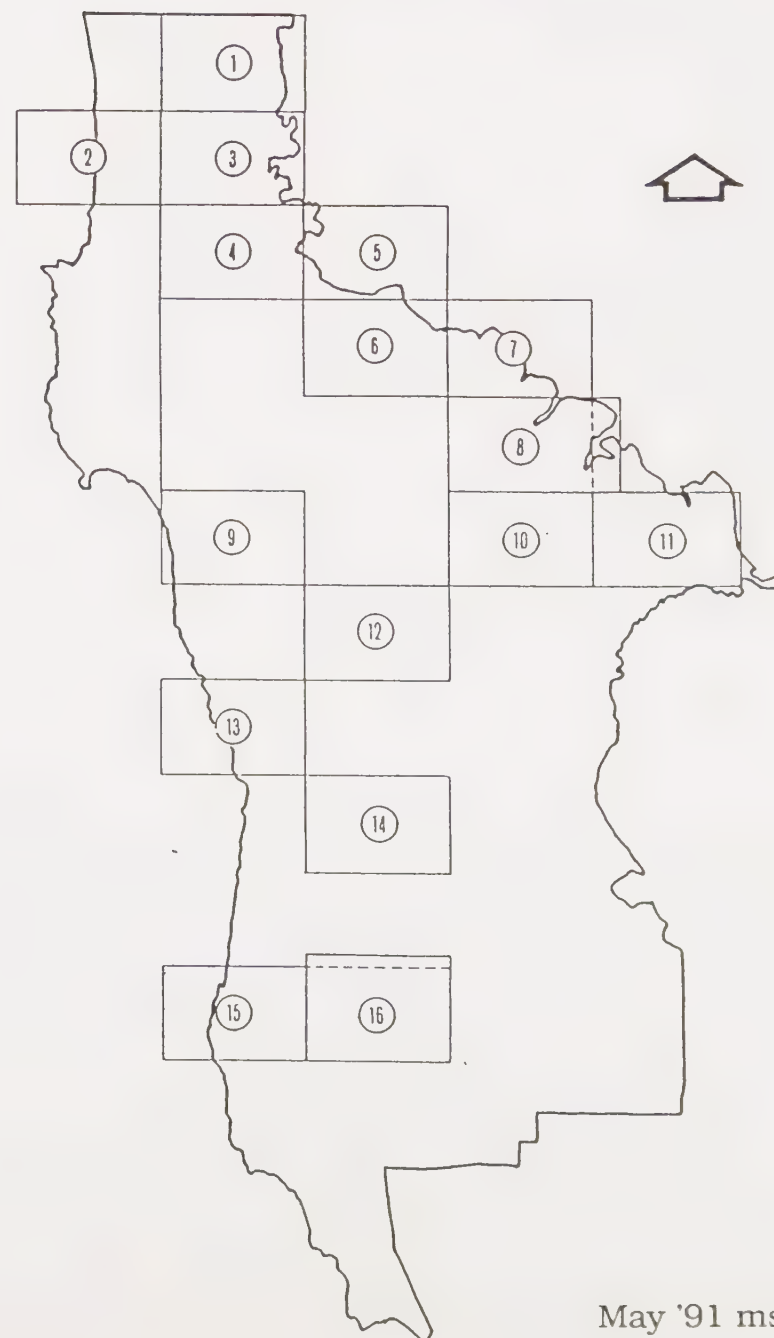


Areas unsuitable for all hazardous waste management facilities, or otherwise suitable but impractical or infeasible due to lack of access or infrastructure.<sup>1</sup>

<sup>1</sup>Ultimate determination of suitability will be dependent upon site specific need/risk assessments and the development of engineered solutions.

**Purpose of Facility Siting Map:** The facility siting map is a graphic representation of the siting criteria when applied to San Mateo County. The map is intended to assist facility proponents and inform the general public of potentially suitable areas within the County to site hazardous waste management facilities. Though suitable areas are shown on the map, actual facility location must conform with the siting criteria contained in the plan.

## Index Map





# FACILITY SITING

1" = 2410'



Index Section 1





# FACILITY SITING

1" = 2410'



Index Section 2

MUSSEL ROCK



SHARP PARK STATE BEACH

P A C I F I C A

E D G E W O O D

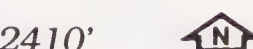
C A B R I L L O

F R E E W A Y

M U S S E L R O C K

L A G U N A S A L A D A

1" = 2410'



Index Section 2



# FACILITY SITING

1" = 2410'



Index Section 3





# FACILITY SITING

1" = 2410'



Index Section 4



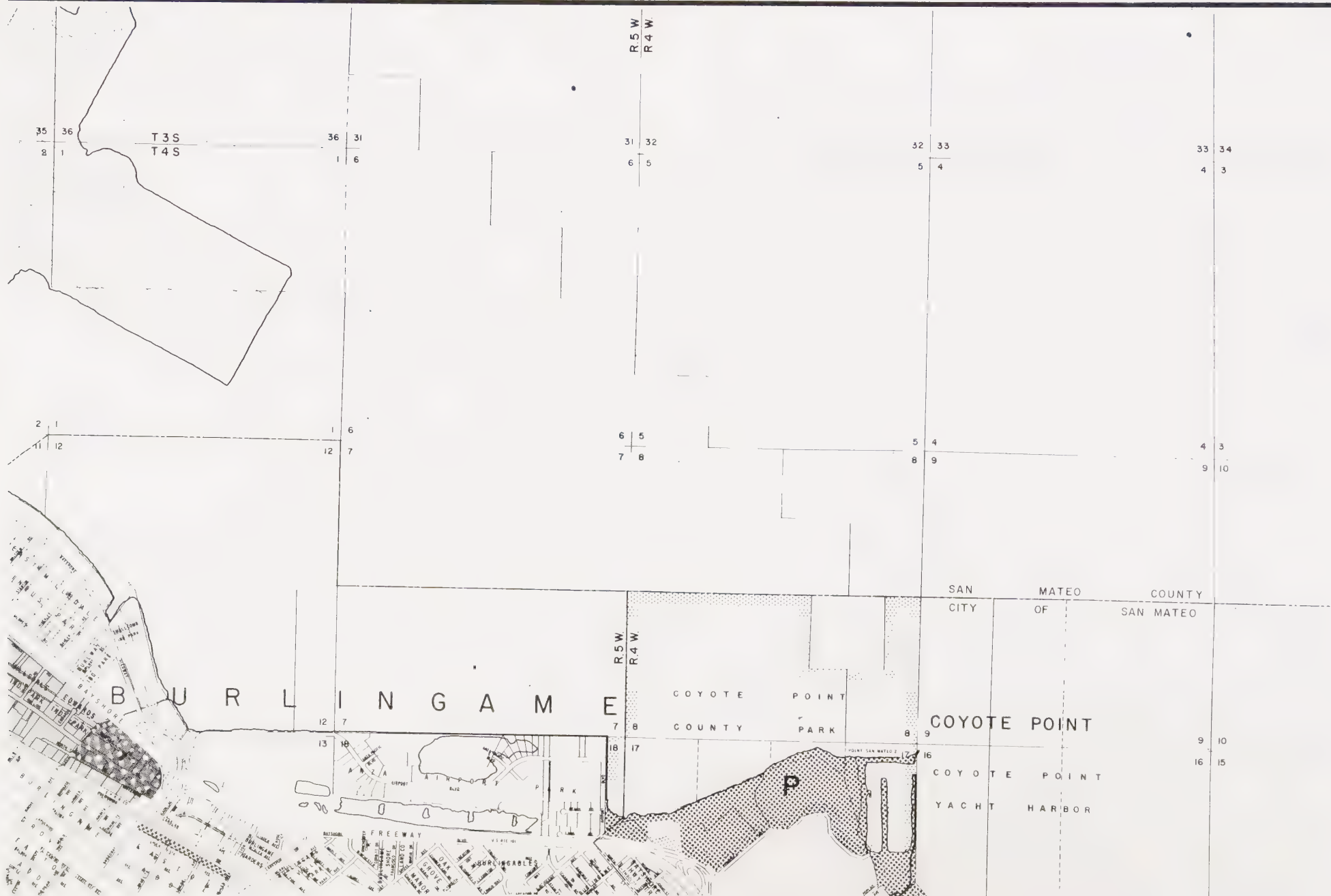


# FACILITY SITING

1" = 2410'



Index Section 5





# FACILITY SITING

1" = 2410'



Index Section 6





# FACILITY SITING

1" = 2410'



Index Section 7





# FACILITY SITING

$$1'' = 2410'$$


## Index Section 8





# FACILITY SITING

1" = 2410'



Index Section 9

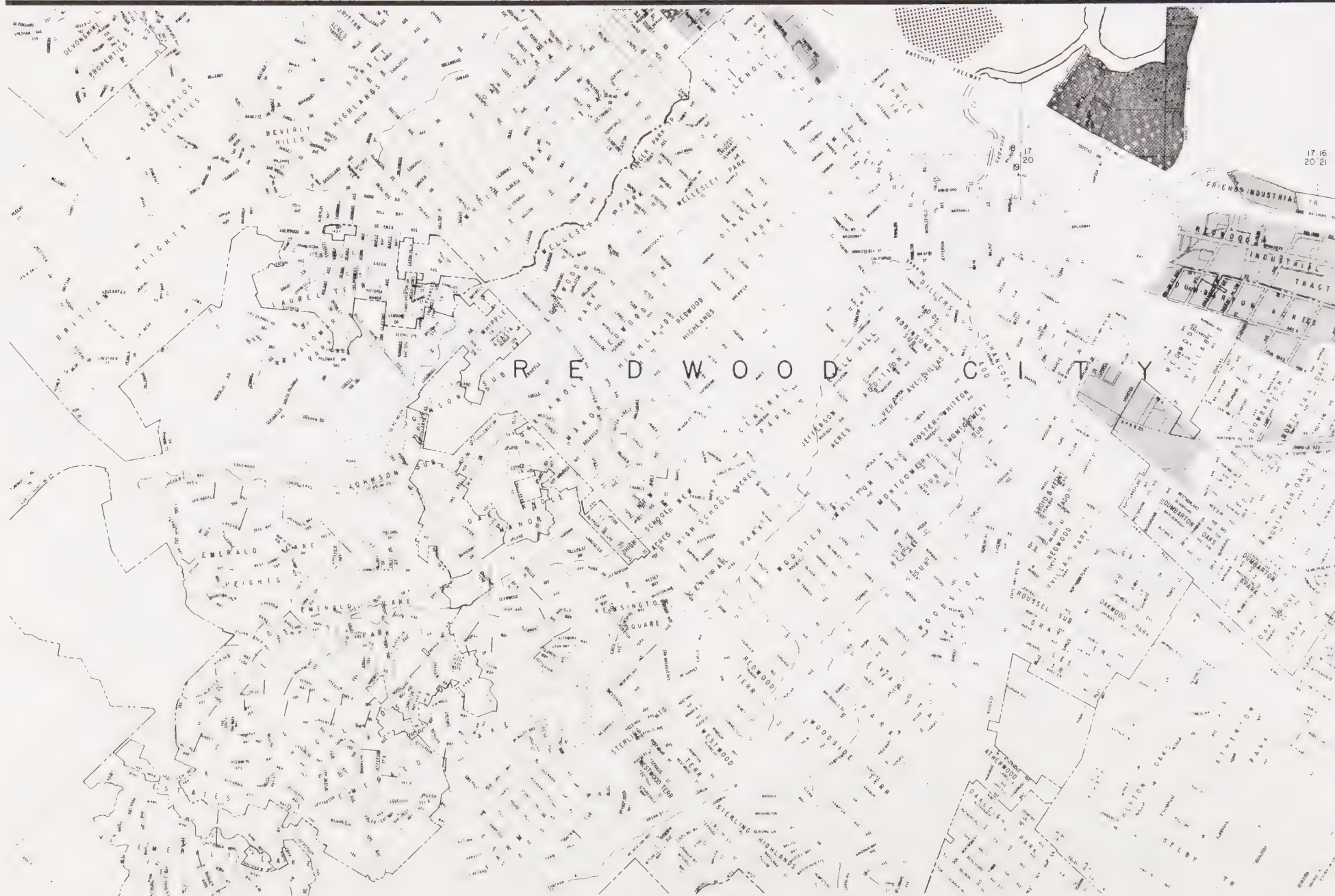




## FACILITY SITING

$$1'' = 2410'$$


## Index Section 10





# FACILITY SITING

1" = 2410'



Index Section 11



9.47



# FACILITY SITING

1" = 2410'



Index Section 12



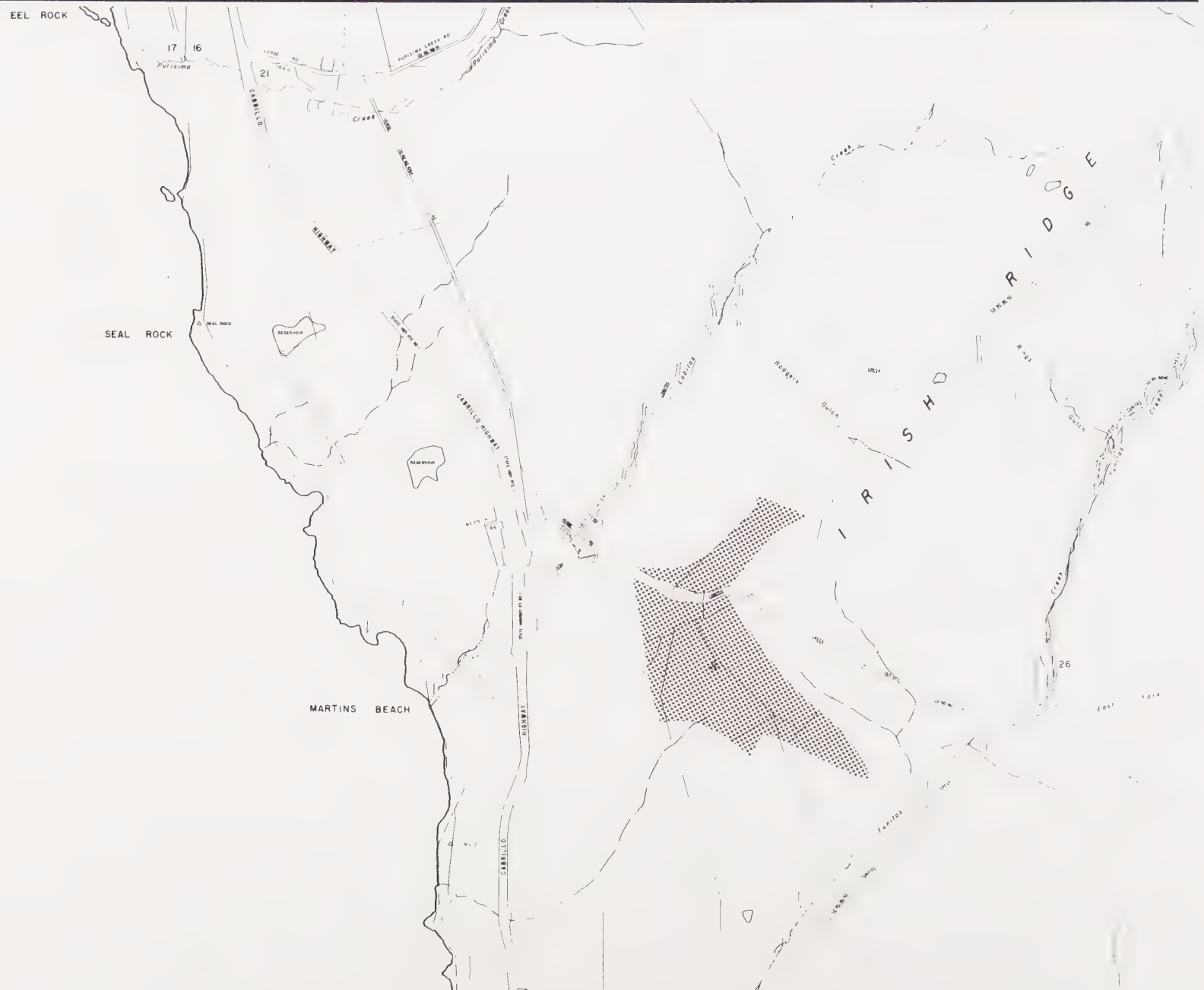
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# FACILITY SITING

$$1'' = 2410'$$

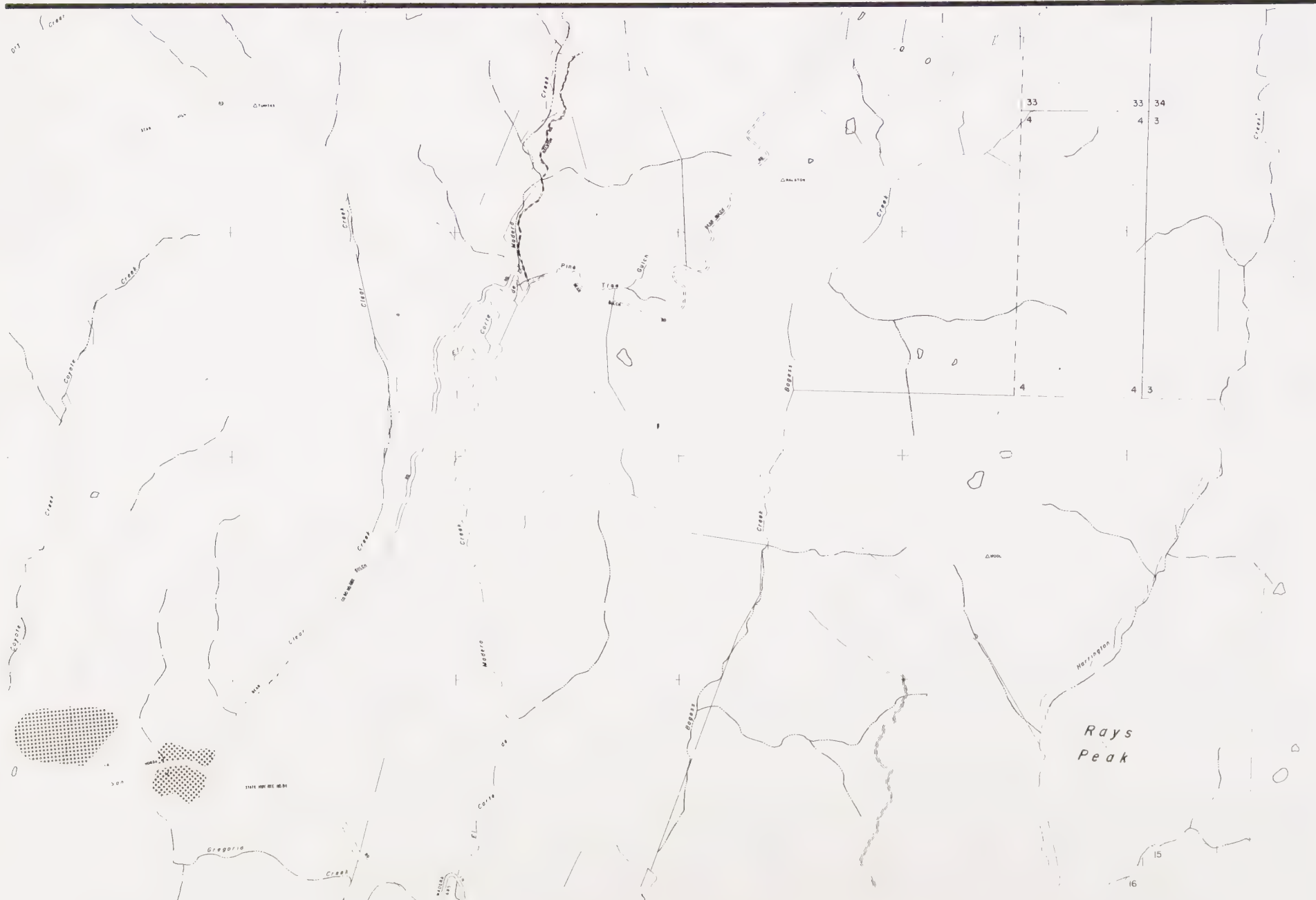

## Index Section 13





$$1'' = 2410'$$


## Index Section 14



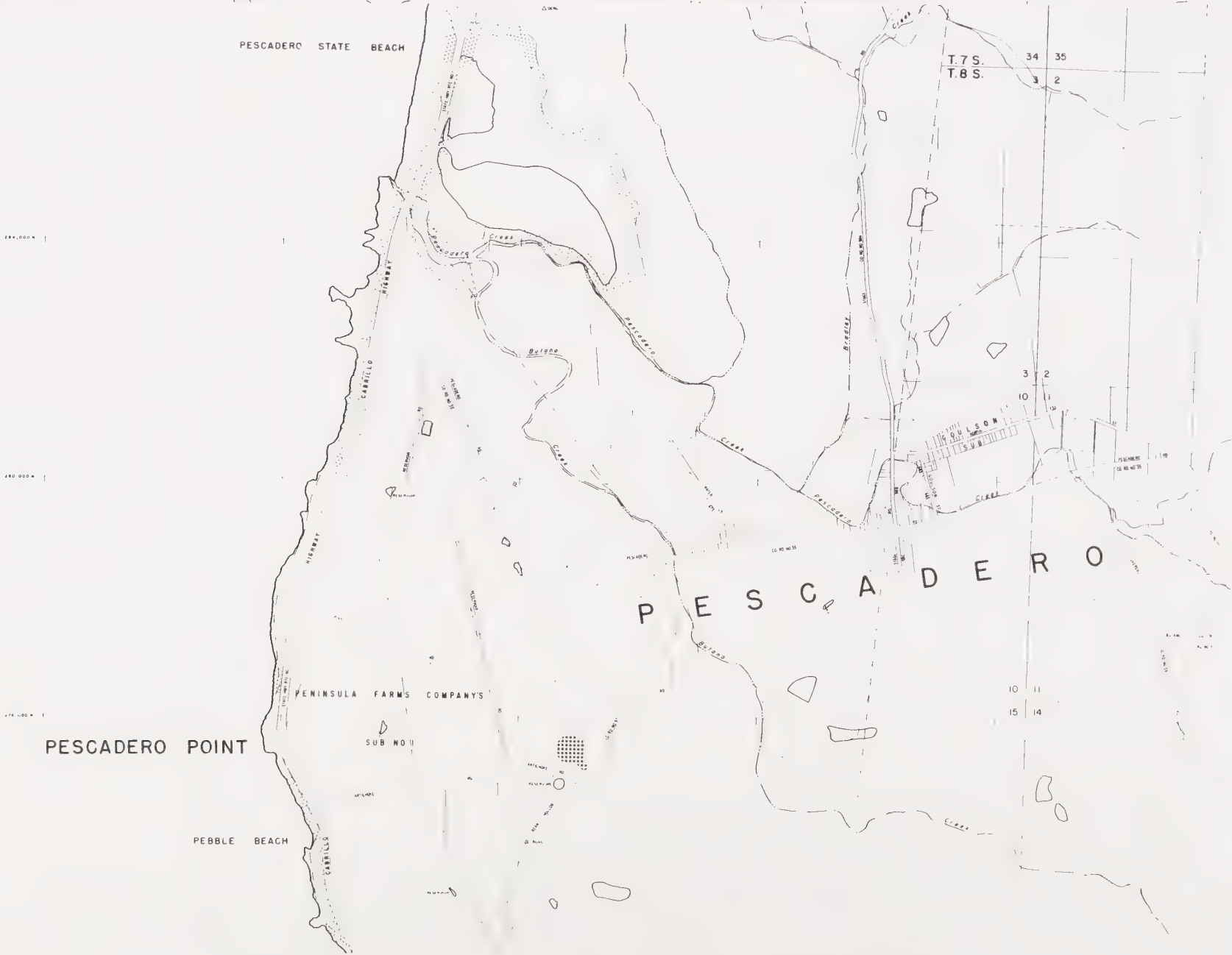


# FACILITY SITING

1" = 2410'



Index Section 15





## FACILITY SITING

$$1'' = 2410'$$


## Index Section 16



R. 5 W.	
R. 4 W.	



# SOURCES USED TO PREPARE THE FACILITY SITING MAP

SITING FACTOR	SOURCE
Seismic	- Leighton and Associates, "Geotechnical Hazards Synthesis Map for San Mateo County" (December 1976).
Flood Hazards	- Leighton and Associates, "Geotechnical Hazards Synthesis Map for San Mateo County" (December 1976).
Wetlands	- Leighton and Associates, "Geotechnical Hazards Synthesis Map for San Mateo County" (December 1976).
Habitat of Endangered Species	- San Mateo County General Plan "Sensitive Habitats Map" (November 1986).
Sensitive Habitats	- San Mateo County General Plan "Sensitive Habitats Map" (November 1986).
High Landslide Susceptibility	- San Mateo County General Plan "Natural Hazards Map" (November 1986).
Slope Stability/ Subsidence/ Liquefaction	
High Soil Permeability	- <u>U.S. Soil Conservation Service, Soil Survey of the San Mateo County Area</u> (May 1961).
Soil Permeability and Depth to Groundwater	
Aquifers	- <u>Resources Engineering and Management, Project Report for Wastewater Treatment and Reclamation Project</u> (February 1974), pages 3-4, Figure 3-4.
Aquifer Recharge Areas	- <u>Geoconsultants, Inc., Groundwater Resources - Half Moon Bay, California (Annual Report 1987-1988)</u> (July, 1988), pages 1-13, Figure 1.
Potable Water Supplies (including emergency wells)	- <u>State Department of Health Services, Wells Serving or Able to Serve 200 or More Residences - San Mateo County</u> (Correspondence from Cathy Ling), Berkeley, California (1984).  - San Mateo County Base Map; U.S. Geological Survey, <u>Sources of Emergency Water Supplies in San Mateo County, California, Open-File Report 75-43</u> (April 1975), Figure 2 (in pocket).

Emergency Services and Utilities	-	<u>The Thomas Guide, San Mateo County Street Guide and Directory (1987).</u>
Nonattainment Air Areas	-	N/A
PSD Air Areas	-	N/A
Immobile Populations	-	<u>San Mateo County Base Map; The Thomas Guide, San Mateo County Street Guide and Directory (1987).</u>
Residential Zones/ Institutional Uses	-	<u>City and County Zoning Maps; The Thomas Guide, San Mateo County Street Guide and Directory (1987).</u>
Commercial Zones	-	City and County Zoning Maps.
Industrial and Special Zones	-	City and County Zoning Maps.
Open Space and Agricultural Zones	-	City and County Zoning Maps.
Recreational, Cultural or Aesthetic Areas	-	San Mateo County Department of Parks and Recreation, "Parks Map" (1988); San Mateo County General Plan "Scenic Corridors Map" (November 1986).
Prime Agricultural Lands	-	<u>San Mateo County "Prime Agricultural Land Map" (1985), and U.S. Soil Conservation Service, Soil Survey of the San Mateo County Area (May 1961).</u>
Airport Passenger Areas	-	<u>Joint Powers Board, Joint Land Use Study, San Francisco International Airport, San Mateo County Environs Area (March 1980), page IIC-30.</u>
Airport Approach Zones	-	San Mateo County Airport Land Use Commission (ALUC), <u>Airport Land Use Plan (1981)</u> , "San Carlos Airport 1995 Noise Contours Map", and "Half Moon Bay Airport 1995 Noise Contours Map."
	-	<u>City and County of San Francisco, Airports Commission, Airport Layout Plan for San Francisco International Airport (1986).</u>
Major Transportation Routes	-	San Mateo County General Plan "Existing Road System Map" and "Transit Systems, Airports, and Seaport Map" (November 1986).
Mineral Resource Areas	-	San Mateo County General Plan "Mineral Resources Map" (November 1986).
Military Lands	-	N/A

# Waste Reduction Opportunities

Source Reduction  
On-site Recycling  
Program Options



## OPPORTUNITIES FOR WASTE REDUCTION

A goal of the Hazardous Waste Management Plan is to reduce the amount of hazardous waste generated in San Mateo County. The most effective approach toward waste reduction is to minimize the generation of hazardous waste at its source, rather than managing the waste after it is generated. The most preferred methods of waste reduction are: (1) source reduction (raw material or product substitution and process changes), and (2) on-site recycling. Utilizing these methods, an average range of between 17-39% waste reduction is possible for 12 industrial processes common in California, as shown in Table 10-1.

This chapter will analyze each approach to waste reduction, identify preferred methods, assess opportunities and constraints, and culminate with a set of waste reduction program options for San Mateo County.

TABLE 10-1

WASTE REDUCTION POTENTIAL BY INDUSTRIAL PROCESS

INDUSTIRAL PROCESS	PERCENT
Electroplating	17% - 42%
Paint Manufacturing	15% - 35%
Petroleum Refining	10% - 27%
Agricultural Chemical Formulation	22% - 31%
Printed Circuit Board Manufacturing	20% - 42%
Printing Operations	15% - 37%
Metal Surface Treatment	15% - 35%
Metal Parts Cleaning	25% - 58%
Paint Application	24% - 51%
Process Equipment Cleaning	14% - 36%
Sulfer Removal Processes	18% - 45%
Wood Preserving	11% - 31%
<b>AVERAGE</b>	<b>17% - 39%</b>

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Source Reduction



## SOURCE REDUCTION

Source reduction is defined as practices or operational changes which reduce, avoid, or eliminate the generation of hazardous waste. This approach is considered the optimal form of hazardous waste management, followed by recycling, treatment, storage, and disposal in that order. Though recycling and certain treatment techniques are quite effective in reducing health and environmental risks, they are not considered source reduction since each is dependent on the initial generation of the waste.

Source reduction offers a multitude of benefits for the public, industry, and government. Decreasing the amount of hazardous waste generated contributes to a cleaner and healthier environment, reduces overall liability and the amount of money spent on the treatment, transport, disposal, and clean-up of hazardous waste. Finally, source reduction increases production efficiency by eliminating the waste from raw materials.

Source reduction can often be accomplished without additional permits or regulatory action, thus allowing industry to proceed without further government involvement. In Europe, source reduction has been used as a means to improve industrial efficiency, growth, and international competitiveness, and not solely for environmental protection.

### 1. Existing Situation

Traditionally, hazardous waste management in the United States has consisted of "end-of-pipe" treatment and disposal, particularly land disposal. Until recently, very little thought was given to decreasing the net amount or toxicity of hazardous materials used or produced during the actual manufacturing process. Several recent trends, however, are causing a shift away from land disposal to waste treatment alternatives, and source reduction.

Landfill disposal of untreated hazardous waste has been proven an unacceptable method of hazardous waste management. With recent landfill closures and the high cost of liability insurance, transport, and disposal fees at remaining landfill facilities, industry is more aggressively considering source reduction as a viable alternative.

Several recent regulations have further encouraged industry to consider source reduction. The Hazardous and Solid Waste Management Act of 1984 (HSWA) amended the Resource Conservation and Recovery Act (RCRA) to include specific Congressional mandates for waste minimization. The statute prohibits landfill disposal of liquids by 1985, and all untreated hazardous waste by 1990, and requires hazardous waste generators to submit a biennial report to the EPA detailing their efforts to reduce the volume and/or toxicity of waste generated. California law (Hazardous Waste Management Act of 1986) also phases out landfill disposal by 1990, while the Hazardous Waste Reduction, Recycling, and Treatment Research and Demonstration Act of 1985 appropriates one million dollars annually for hazardous waste reduction research and demonstration efforts. In Ventura

County, a proposed land use ordinance may soon condition approval of hazardous waste generating activities upon the applicant's ability to demonstrate that the "activity or facility to which the application pertains will be conducted or operated . . . in such a manner as to minimize to the greatest extent feasible the volume and toxicity of hazardous waste to be produced." These regulatory as well as economic and availability factors are causing industry to seriously consider source reduction as a preferred method to manage hazardous waste.

## 2. Methods of Source Reduction

There are numerous methods by which source reduction can be accomplished. Each is usually preceded by an internal waste audit. An audit is a comprehensive survey conducted by in-plant personnel or consultants which inventories raw materials and analyzes the production process in order to identify where a company's potential for source reduction is the greatest, and which method may be employed to reduce generation. A waste audit should include an analysis of the relationships between raw materials and hazardous wastes produced (material/waste balance), and an examination of chemical use and waste generation, points of waste discharge, chemical profile of waste generated (why is it hazardous), disposition of wastes and disposal costs.

The following summarizes the primary source reduction methods commonly employed after a waste audit and cites examples of companies nationwide that have implemented these methods.

### a. Raw Material Substitution

Non-hazardous or less toxic hazardous raw materials may be substituted in the manufacturing process to reduce the amount and/or toxicity of the resultant hazardous waste. For example, water based raw materials have been substituted for organic solvents to yield less hazardous waste resulting from industrial operations.

Raw material substitution sometimes necessitates changes in the manufacturing process or in the composition of the end product. Therefore, raw materials substitution has the potential to be an expensive process that may be difficult for small business to implement. Also, small companies may not have as much flexibility as large firms do to substitute raw materials due to a dependence on other firms for supply of raw materials.

Scoville, Inc., as an example, replaced a toxic organic solvent with a water soluble cleaner for degreasing applications. Riker Laboratories also replaced organic solvents used to prepare coated medicine tablets with a water based solvent. Emerson Electric Company of Murphy, North Carolina, replaced an organic solvent spray paint system with a water based immersion paint system thereby reducing hazardous waste generation from 3,040 lbs./day to 160 lbs./day.

b. Process Changes

(1) Minor Processing Changes: Good Operating Practices

Source reduction may be accomplished by minor changes in the industrial operation such as good "housekeeping" and maintenance type practices. Housekeeping refers to the methods of handling the materials and people involved in a manufacturing process, whereas maintenance procedures are those which relate to the physical upkeep of plant equipment. Examples of good housekeeping and maintenance practices include inventory control, waste segregation, and equipment maintenance. Inventory control, which reduces waste through avoiding over purchasing of raw materials and ensuring that inventory quantity does not go to waste, is a minor process improvement in housekeeping that can reduce the generation of hazardous wastes. Waste segregation, another housekeeping method, prevents the mixing of hazardous and non-hazardous wastes, thereby avoiding the creation of large hazardous waste volumes. Frequent and effective equipment maintenance may reduce waste generation through efficient machinery operation and spill prevention.

Housekeeping and maintenance activities do not affect the quality of the final product, but can increase the efficiency with which that product is manufactured. Improved operating practices are simple, "low-tech," and may be achieved within normal plant operation modification procedures. This method of source reduction does not require a significant capital investment, and is thus easy for small as well as large businesses to implement.

Studies in the chemical manufacturing industry have shown significant waste reduction yields from low cost maintenance and housekeeping changes. Since 1982, Borden Chemical Company's Fremont plant has reduced the amount of organics in wastewater by 93% through changes in the handling of materials. Exxon Chemical Americas significantly reduced hazardous emissions by installing floating roofs over its tanks of volatile solvents.

(2) Major Process Changes: Process and Equipment Modification

The actual manufacturing process and equipment used may be changed in order to reduce the generation of hazardous waste. Process modification is used when final product and raw materials cannot be altered. A number of industries are realizing the potential benefits of major process changes. In the semiconductor industry, for example, a major process which requires the use of organic solvents has been replaced with a process which requires only a mild alkaline solution. In the metal finishing industry, use of the same rinse water on more than one item to clean off hazardous waste (concurrent rinsing) is a well demonstrated wastewater reduction method. In all industries mechanical cleaning techniques used to clean metal surfaces can replace processes which require solvents. Process or equipment modification can be technologically complex and very expensive and may therefore be difficult for small businesses to finance.

Amoco Chemicals reduced its ignitable and oily wastes by 60% to 70% by modifying a manufacturing process. Dow Chemical was able to reduce one procedure's use of a hazardous chemical by 37% by installing an automated system to adjust the concentration of this chemical in the manufacturing process.

c. End Product Substitution or Redesign

This method involves altering the design, composition, or specifications of the final product so as to reduce the amount of hazardous waste resulting from the manufacturing process.

End product substitution or redesign is the most extreme source reduction method in that it affects the characteristics of the final product. This method can be difficult to implement because of the constraints imposed by consumer acceptance of the product, or by performance specifications. This method may require significant and costly changes in the manufacturing process.

Examples of product substitution used in industry include replacing lead and oil based paints with acrylic paints, replacing solvent cleaners with aqueous cleaners, replacing chlorinated pesticides with pesticides that are not environmentally persistent, and replacing cadmium with zinc or other less toxic metals in the metal coating industry. Also, highly toxic PCB's as electrical insulating fluids are often replaced with silicon oils.

3. Opportunities and Constraints for Source Reduction

a. Constraints

(1) Institutional Barriers

An institutional obstacle to widespread source reduction is the historical dominance of pollution control rather than waste reduction. More than 99% of all government spending on the environment is devoted to controlling pollution after waste is generated. Of the \$1.5 billion budgeted for the Environmental Protection Agency in fiscal 1988, only \$398,000 (0.3%) has been requested for "waste minimization," an umbrella term that includes recycling, waste treatment, and waste reduction.

(2) Financial Barriers

The multitude of federal and state regulatory programs which focus on treatment and disposal solutions is usually quite costly to industry. The difficulty for a generator, then, is to continue to invest and spend on regulatory compliance and improved waste management while at the same time investing and spending on waste reduction.

An individual firm's access to sources of financing depends on many variables including its financial strength, growth rate, size, and stage of development. Financial constraints also vary

with the type of source reduction method being financed. The implementation of minor process and "housekeeping" changes does not require large amounts of money. Major process changes, however, are capital intensive.

### (3) Attitudinal Barriers

The preference for pollution control has also created attitudinal barriers to the use of source reduction measures. Pollution control is often perceived as being the safer choice because the technologies of waste management are more familiar than those of waste reduction, and there is no risk of impairing product quality. In actuality, however, most forms of source reduction do not pose a risk to product quality.

Regardless of the technical and long-term economic feasibility of source reduction, ignorance and inertia are powerful constraints to effective action. Indeed, it is individual perception created by a lack of experience and information that is the chief obstacle to the implementation of source reduction measures.

### (4) Technical Barriers

Technical barriers are not a significant constraint to source reduction. There are many technical methods to reduce waste generation which vary significantly in complexity, cost, and effectiveness. Several source reduction methods are not technologically oriented, but rather focus on reducing waste through more careful "housekeeping" measures.

The key to utilizing the currently available technology is encouraging firms with the technical ability and motivation to evaluate and implement the source reduction options. In order to take advantage of the potential for source reduction, it must be recognized that the key issues of importance are: (1) how people and organizations perceive the need for source reduction, (2) how they evaluate a full range of methods for its implementation, (3) how they make a decision to proceed, and (4) how they are awarded. Agencies must take this fact into account when trying to create opportunities for industry to use source reduction.

## b. Opportunities

As discussed earlier, current events are creating a gradual shift away from treatment and disposal toward source reduction. However, this change will not occur automatically as bias and resistance against it does exist. There is much that can be done to assist industry and small business in realizing the benefits of source reduction and instituting successful source reduction programs.

### (1) Regulatory vs. Voluntary Approach

Government must decide whether to approach source reduction from a regulatory or voluntary approach. It must also decide how to

balance source reduction and pollution control programs. Approaching source reduction as a primarily regulatory program may prove untenable for any government organization, as it would be extremely difficult to regulate the large number and variety of existing industrial and manufacturing processes. However, there are several ways that industry can be encouraged and supported in its efforts to reduce waste generation. These include raising awareness of waste reduction potential, providing technical assistance, and coordinating the availability of funding.

(2) Raise Awareness of Source Reduction Potential

Raising the awareness of industry to the potential benefits of source reduction is the first step that must be taken to facilitate widespread acceptance of source reduction. Before firms will express interest in receiving technical or financial assistance, they must be convinced that source reduction is an alternative, and potentially economical, method of hazardous waste management. A very effective way to demonstrate source reduction's potential is to make known the effectiveness and economic benefits provided to those companies that have instituted it. Public recognition of individual company success through some type of awards system is an easy and positive way to increase awareness of source reduction. Information about individual successes and source reduction in general can be presented in seminars and speeches, in direct mailings to companies, and through media contact. The objective of publicity about source reduction is to get industry to seriously consider the possibility of utilizing source reduction.

(3) Provide Technical Assistance

Technical assistance can be provided in several different ways. Much technical assistance can be provided by simply supplying information on source reduction methods. One way to provide information is through an information clearinghouse. A clearinghouse could supply both information and expert advice through a reference center, access to information on specific processes, and referrals for waste exchange. A clearinghouse could also provide feedback from its users to affected agencies. This is a passive device, the success of which would depend on how well it was publicized.

A more aggressive program of information dissemination could include trade and business meetings, public agency sponsored conferences, and industry-specific technology transfer workshops. An emphasis on showing industries examples of successful waste reducing companies in their field is a good way to illustrate the technical feasibility of source reduction measures. One example of how this approach might be used would be to hold technology transfer workshops at plants which have developed and implemented pollution prevention and source reduction techniques.

The most active form of government participation would be direct technical assistance to hazardous waste generators. This type of program could consist of developing a management plan for groups of small generators in similar situations, consultations with firms, and site visits on request. Such direct assistance could be especially beneficial to small quantity hazardous waste generators who usually lack the knowledge of relevant regulations, trained staff, and capital resources of larger firms.

(4) Coordinate Availability of Funding

The perceived financial barriers to the implementation of source reduction measures are, for many firms, sufficient reason not to investigate the possibility of source reduction. Government assistance in providing both information about available funding and funding itself can increase the number of firms that consider source reduction economically feasible. Two distinct financial concerns exist: how to fund local government source reduction programs and how to help companies finance their own source reduction measures.

For the financing of local government programs, several funding options at different levels of government currently exist. At the state level, as much as \$6 million in funding will be available this year through the Tanner legislation (AB 2948). These funds are intended for planning the initial stages of a local government source reduction program and not as continued sources of program support. The California State Department of Health Services has a waste reduction grant program which is funded at a total of \$1 million per year. The recipient must match at least part of the grant money but such a grant may be sufficient for initial development of a program which, when established, can be supported through local funding means. Several local funding options involve fees for particular land use activities. AB 2948 (Tanner) allows local governments to collect a tax of up to 10% of the gross receipts of any offsite hazardous waste management facility used for storage, treatment or disposal of hazardous waste. Fees can be added to permit renewals and applications for new permits for industrial hazardous waste dischargers. Fees can also be collected from all hazardous waste generators. Fees should not be so high, however, that they encourage the illegal generation and disposal of hazardous waste.

Larger businesses have numerous source reduction financing options to choose from. These include venture capital, equity financing, commercial loans, corporate bonds, and operating budgets. Large companies are likely to take advantage of tax credits and depreciation of capital equipment. For these firms, however, positive economic incentives are generally considered an added bonus, rather than an initial inducement to pursue waste reduction. Small businesses usually do not have access to the financial resources available to large businesses.

There are several possible funding mechanisms available to implement a source reduction program. These include: (1) grants, (2) loan guarantees, (3) interest subsidies, (4) state-issued loans, (5) tax credits, and (6) tax deductions.

(a) Grants

Grants usually involve direct payment from a government agency to either hazardous waste generators or others engaged in source reduction activities. Government grants may be structured to encourage specific types of source reduction activities, assist specific types of firms, and/or reduce specific waste streams. Grants may be structured to assist large and small businesses alike. The states of Minnesota, North Carolina, and Wisconsin have established grant programs for source reduction projects, including waste audits, feasibility studies, and demonstration projects.

(b) Loan Guarantee

A loan guarantee is a commitment by government to a lender that should a borrower fail to repay a loan, the guarantor will repay it. This mechanism can improve firms' financing opportunities in two ways: (a) it increases the pool of capital available for investment in source reduction by reducing reluctance of commercial banks to giving loans for source reduction, and (b) it may increase the term of commercial loans available due to less risk. Firms most likely to benefit from a loan guarantee program would be small, privately held firms and/or high-growth companies that face institutional restrictions on borrowing.

The federal Small Business Administration (SBA) has two relevant loan guarantee programs. Its "Section 7(a)" Program issues loan guarantees for long-term loans to small businesses. Its "Pollution Control Financing Guarantee Program" is designed specifically to help small businesses obtain low-cost financing for pollution control and waste reduction projects. However, strict eligibility criterion, substantial processing fees, and administrative delays has made financing difficult.

California's State Small Business Loan Guarantee program is similar to the federal SBA program. This program, however, is designed to promote employment and industry throughout the State rather than specifically encourage source reduction programs.

(c) Interest Subsidies

Interest subsidies are payments by the government that reduce the cost of borrowing through either commercial loans or corporate bonds. These subsidies can be structured in

several ways including: (a) payment of a fixed number of points on the interest rate, (b) any interest payments in excess of a specified interest rate, and (c) a fixed proportion of the total interest payments.

The California Pollution Control Financing Authority (CPCFA) presently issues tax-exempt revenue bonds to finance investments in equipment required to meet regulatory standards for air and water quality. However, the Internal Revenue Service has recently suggested that such tax-exempt financing is generally available only for waste reduction measures that reduce the quantity of wastes already generated.

(d) State Issued Loans

State issued loans specifically for source reduction could be available directly to eligible firms. This mechanism would eliminate the need for the cooperation of a commercial lender. A disadvantage of this approach, however, is the need to establish an administrative system for evaluating the financial standing of applicants.

A New York State agency, the Environmental Facilities Corporation, has proposed that a \$2 million revolving fund be established to provide loans to small and medium sized companies for the implementation of waste reduction measures. The funds for this program have yet to be approved.

(e) Tax Credits

A tax credit is usually a direct reduction in a company's tax liability. The credit may be granted against any of the taxes paid by the firm. Tax credits may apply equally to small and large businesses or may be targeted to a specific size or type of business.

The State of Minnesota allowed an income tax credit for 5% of the cost of equipment used primarily for waste reduction. However, the credit was never used; it was passed in 1984 and then repealed in 1985. California entitles a corporation or person with 100 or fewer employees engaged solely in the metal finishing business to a tax credit of 20% for certain pollution abatement equipment.

(f) Tax Deductions

A tax deduction is a mechanism to reduce a firm's taxable income. At present, all waste reduction expenditures made by a firm are already deductible business expenses for the purposes of the State income tax. However, if the State accelerates the rate at which capital investments for waste reduction can be depreciated and deducted from taxable income, waste reduction could be further encouraged. Because a tax reduction is subtracted from income before taxes,

while a tax credit is subtracted directly from the tax liability of a company, a deduction provides less incentive to firms than a tax credit of an equal amount. The State of North Carolina allows firms to depreciate the costs of facilities and equipment used for waste reduction over a five year period, rather than under the standard depreciation schedule used for federal taxes.

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On-site Recycling



## ON-SITE RECYCLING

Recycling is the second most preferred method of waste management after source reduction. In contrast to source reduction which reduces the amount of waste initially generated, recycling attempts to make the most efficient use of waste after it has been generated, and thereby reduce the net amount of waste produced. Recycling is the practice of recovering usable materials from wastes. A waste is recycled if it is used, reused, or reclaimed through reprocessing or regeneration.

Recycling can be accomplished both on- and off-site. On-site recycling is preferable to off-site because it reduces the risks and cost associated with the transport of hazardous materials. Within the context of this plan, waste reduction will only include on-site recycling.

The benefits of on-site recycling are similar to those provided by source reduction. Reducing the net amount of waste resulting from the manufacturing process through recycling contributes to a cleaner environment, lower treatment, disposal, and liability costs for industry, and higher production efficiency.

### 1. Existing Situation

The same factors which encourage the use of source reduction are also encouraging on-site recycling. These include the high cost of treatment and land disposal, as well as a regulatory environment which requires industry to demonstrate how it is reducing hazardous waste.

Recycling is a more traditional method of waste reduction than source reduction in that it is an "end-of-pipe" technique which reduces hazardous waste after it has been generated. Also, there is a general cultural awareness of recycling as a generic waste reduction technique which helps facilitate its acceptance.

### 2. Methods of Recycling

There are three primary methods of on-site recycling. These are: (1) in-process reuse (reuse as a raw material in the process which generated the waste), (2) reuse as a raw material in another production process, and (3) recycling of the waste into a marketable product. Recycling has more applications with liquid than solid or gaseous waste. Those waste types which have significant potential for recycling include solvents, oils, metals, and empty containers. The following is a description of each commonly used on-site recycling method:

#### a. Reuse

Redirection of waste back into the process that generated it is the most common form of on-site recycling. Reuse of waste in another process at the site is the second most common method of on-site recycling.

Most wastes require some type of processing before they can be reused. For example, distillation removes the impurities accumulated during the manufacturing process from waste organic solvent so that the clean solvent may be reused. The process of preparing waste for reuse generally involves only slight modifications to the waste, and does not generally result in the formation of a residual product.

Reuse is generally the easiest and least expensive method of on-site recycling because it minimizes the treatment and transportation necessary before the waste can be reused. Reuse is usually an integral part of a firm's production process. Closed-system or "feedback" loops are often used to direct the reclaimed waste product back into the same or another production process, therefore, allowing this form of recycling to occur automatically.

The source reduction strategy of waste segregation, which prevents the mixing of different hazardous wastes, is necessary for many types of waste reuse to occur. For example, a North Carolina pesticide manufacturer's collection and storage of the dust from several different processes separately allows it to recycle each dust back into its original process.

The following are examples of reuse:

(1) In-Process Reuse

Many California newspaper publishing firms reuse their waste ink after filtering paper dust contaminants out of it. BASF Corporation in Anaheim used distillation to recycle a waste solvent stream which was then reused in the process to clean dirty equipment. This recycling procedure resulted in an 86% cost savings in purchasing "new" solvents.

(2) Reuse in Another Production Process

An established practice in the photographic processing industry is the recovery of silver from the processing baths for use in other on-site processes.

b. Recycling Into a Marketable Product

Recycling hazardous waste into a marketable product usually involves more significant modifications to the waste than the reuse options, and requires separating out the recyclable components of the waste stream. Therefore, more residual material tends to be formed through this type of recycling than through reuse. The marketable product resulting from this recycling process may be sold or may be used by the company that produced it. One example of recycling into a marketable product involves converting waste solutions and sludges with high zinc content resulting from a galvanizing process into fertilizer and supplements for animal feed.

### 3. Opportunities and Constraints for On-Site Recycling

#### a. Constraints

##### (1) Institutional Barriers

Similar to source reduction, the widespread use of recycling has been hampered by an institutional emphasis on pollution control. As earlier indicated, waste reduction, including on-site recycling, constitutes less than one percent of the government's spending on the environment.

##### (2) Financial Barriers

Again, as with source reduction, continued spending on regulatory compliance can limit industry's ability to invest in recycling programs. On-site recycling is generally more expensive to implement than source reduction because it often involves major process changes or the creation of new processes entirely.

##### (3) Attitudinal Barriers

The historical dominance of pollution control has created an attitudinal preference for "end-of-pipe" waste management methods. The bias against waste reduction is not as detrimental to recycling programs as it is to source reduction. This is primarily due to the fact that: (1) recycling is an "end-of-pipe" method (i.e., a method of managing waste after it has been generated), and (2) recycling is a more culturally accepted means of waste reduction.

##### (4) Technical Barriers

There are a multitude of technologically possible recycling techniques which vary considerably in complexity and cost. As with source reduction implementation, the key to implementing recycling programs is encouraging people with the necessary technical knowledge to evaluate and implement recycling options.

#### b. Opportunities

The opportunities to encourage on-site recycling of hazardous waste are the same as those identified for source reduction. In order to facilitate widespread use of any waste reduction method, including on-site recycling, government should raise awareness of the method's potential, provide technical assistance, and coordinate the availability of funding.





## Program Options



## WASTE REDUCTION PROGRAM OPTIONS

The County may take a regulatory or non-regulatory approach toward establishing its waste reduction program. The success of either, however, will to a large extent depend upon how the program is perceived by the business community. This section will overview existing waste reduction efforts by businesses in San Mateo County, and identify and discuss the range of specific options available to the County for inclusion in a waste reduction program.

### WASTE REDUCTION GOAL

The potential for waste reduction varies widely by waste type and manufacturing practice. Review of the current literature reveals a broad range of waste reduction potential estimates, varying between 2 and 65%. Incorporating all available data, the Association of Bay Area Governments (ABAG) has established a waste reduction potential estimate for the region at between 10% and 40%.

The policy goal for this plan is to facilitate maximum feasible waste reduction. Therefore, as a measurable objective, the plan will strive to facilitate a 40% decrease in aggregate waste generation between 1986 and the year 2000.

### WASTE REDUCTION EFFORTS BY SAN MATEO COUNTY BUSINESSES

Survey data indicates that many companies within San Mateo County have already made significant achievements in waste reduction. The implementation of waste reduction measures has been motivated primarily by economic considerations, particularly the costly disposal and treatment costs and the liability associated with them. Although many of the survey respondents indicated that the initial cost of waste reduction measures was a financial burden, the payback period is usually short due to the significant savings in disposal and treatment costs.

San Mateo County firms have used a wide variety of source reduction and recycling methods to achieve waste reduction. Source reduction measures used include process changes, chemical substitution, product reformulation, and "housekeeping" or minor process changes. The primary recycling method employed is in-process recycling. The following paragraphs describe the specifics of several successful waste reduction programs which have been implemented by firms in San Mateo County.

The O'Brien Corporation, a paint manufacturer in South San Francisco, is an excellent example of a company that has developed and implemented a thorough waste reduction program. When the company realized how much it was spending to dispose of hazardous waste, it became committed to developing a waste reduction program. As an initial step, O'Brien created a new department for hazardous waste reduction and regulatory issues. This department conducted an internal waste audit which determined where there was significant potential for waste reduction.

Prior to the audit, O'Brien generated about one million gallons per year of contaminated wash water from cleaning out the production equipment used to

manufacture latex based paint. This wash water went through a water treatment process which rendered most of it non-hazardous, while the balance (paint sludge) required hazardous waste disposal. O'Brien now reuses untreated wash water by channeling it back into the paint production process. The company has not generated any latex contaminated waste in the past nine months. In addition, O'Brien has reduced the amount of solvent required to make its oil-based paint by 20,000 gallons per year. O'Brien has also instituted smaller process changes. For example, small paint spills are now cleaned up with an absorbent material that is compatible with the paint and, therefore, may be put directly into the paint production process.

The major difficulty in implementing waste reduction at O'Brien was convincing internal management that the quality of the paint would not be compromised by waste reduction techniques. Once this was accomplished, O'Brien was able to reduce its generation of dye and paint sludges and resins requiring off-site treatment by 80% and miscellaneous wastes by 90%.

Kelly-Moore, another paint manufacturer located in San Carlos, also reuses its untreated wash water and has reduced its generation of dye and paint sludges and resins requiring off-site treatment by 90%. Kelly-Moore has also replaced several chemicals with less hazardous ones without sacrificing the quality of the paint.

Etched Circuits, a manufacturer of printed circuits located in Redwood City, has just installed a system which will eliminate the need for certain acids by using electricity rather than chemicals to strip metal parts. This will eliminate the need to ship approximately 10 tons per year of acid waste to an off-site facility. In addition, Etched Circuits installed a production process which separates heavy metals from a hazardous waste solution. The solution is made non-hazardous and the metal is sold to scrap dealers. This process has resulted in a 50% reduction in the amount of metal-containing liquids requiring off-site management.

Although these firms have been very successful in reducing the amount of hazardous waste requiring off-site management, most of them acknowledge a potential for more waste reduction. The surveys reveal that there are three main difficulties in implementing waste reduction measures. These are cost, technical reformulation, and internal concern about preserving product quality. Approximately half of the survey respondents indicated that workshops on waste reduction in their specific area of industry would be helpful, as well as legislation to provide more incentives for waste reduction. In addition, the permitting process associated with instituting waste reduction processes seems to be a perceived impediment. Many firms indicated that permitting assistance would be helpful. Specific County measures that might help companies overcome these barriers will be discussed in the next section of this plan.

## **COUNTY AND STATE WASTE REDUCTION EFFORTS**

To date, the County has not concentrated its efforts on waste reduction. However, the State of California has commenced waste reduction efforts. The State Department of Health Services administers the Waste Reduction Grant Program, which provides money to individuals, businesses, trade associations, public agencies, and universities for the research, development, and demonstration of hazardous waste reduction technologies. Grants are provided for various phases of project development including feasibility studies, design, construction, and effectiveness evaluation studies.

The State Department of Health Services has retained professional consultants to evaluate waste reduction feasibility in specialized industry groups. The agency also maintains a unit to provide technical assistance to firms desiring waste reduction guidance. When generators transport hazardous waste, they are required to sign the State's Uniform Hazardous Waste Manifest. By signing this manifest, a generator declares that "if I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable . . . if I am a small quantity generator, I have made a good faith effort to minimize my waste generation."

## **WASTE REDUCTION PROGRAM OPTIONS**

### **1. Non-Regulatory Approach**

Three general areas of opportunity have been identified whereby a public agency, such as San Mateo County, could encourage and facilitate waste reduction. These are: (1) increasing awareness of waste reduction, (2) providing technical assistance, and (3) coordinating available funding.

#### **a. Increase Awareness of Waste Reduction**

The County should focus on increasing business and industry's awareness of the potential for waste reduction. This can involve a program for information dissemination which emphasizes the economic benefits available from waste reduction. Such information is the most likely to encourage businesses to consider instituting waste reduction programs. The County could prepare and distribute informational pamphlets or newsletters, which would include a discussion of the resources available to help generators implement waste reduction programs. During the initial stages of such a program, it is important that the County inform major hazardous waste generating firms that educational resources are available.

The County could also sponsor seminars and speeches which focus on hazardous waste reduction techniques relevant to local industrial operations. These presentations could be given by both County employees and industrial representatives who have experience with waste reduction. Activities could include field visits to companies where waste reduction measures have been successfully implemented. In response to a survey questionnaire distributed to known hazardous waste generators, many industry representatives indicated that workshops on waste reduction for their industry would be helpful in increasing their company's ability to accomplish waste reduction. The analysis of the hazardous waste stream in San Mateo County has identified the electronics, chemical manufacturing, and paint formulation industries as the primary sources of hazardous waste. Workshops focusing on these industry sectors would be a good starting point for a technology transfer program.

Public recognition of ongoing industry successes is a very positive way to publicize the benefits of waste reduction. The County could institute a public recognition program which both rewards successful company efforts, and encourages other companies to pursue waste

reduction. Recognition of a specific firm's waste reduction success should take place in a public forum and involve press or media coverage. Television and newspaper coverage of an awards dinner, for example, would be an excellent way to inform industry of the benefits of waste reduction.

b. Provide Technical Assistance

San Mateo County has an opportunity to help industry and business institute waste reduction measures through provision of technical assistance. There are numerous ways to provide technical assistance which vary greatly in cost and approach.

Technical assistance at a basic level could consist of developing a County waste reduction library. Such a library should contain information on the technical aspects of specific waste reduction methods as well as financing opportunities, potential economic benefits, and regulations governing hazardous waste. A hazardous waste reduction library should be staffed by or located near experts, such as County Health Department personnel, who can provide advice on waste reduction. A library could also provide an outlet for feedback on industry needs and County waste reduction efforts. The library should be centrally located for convenient Countywide access. In addition, a hazardous waste "hot line" telephone number could be established for people to call in and receive answers to questions over the phone. This would allow increased usage of the County's information supply. A data management system for storing, manipulating, and reporting information could also be created which would help firms access pertinent information quickly.

More aggressive forms of technical assistance include trade and business meetings, conferences and, as previously discussed, industry-specific technology transfer workshops. The County could, alone or in concert with other public agencies or industry, sponsor meetings and conferences which provide technical guidance on implementing a hazardous waste reduction program. Advice on instituting small process changes, such as improved housekeeping and maintenance practices, would be especially suitable at these meetings because this information is universal in nature and readily applicable with basic instruction. To advise on major process changes or recycling measures, the County could establish more focused one-on-one technical advisory meetings with specific large generating companies.

The first step in a firm's waste reduction program is usually an internal waste audit. This audit insures that all of the company's opportunities for waste reduction are recognized. The County could provide direct assistance to companies, especially small ones, in conducting a waste audit. This could involve experts, either trained County employees or hired consultants, to assist firms in conducting their audits. Preference could be shown for smaller companies, with fewer financial resources to commit to performing a waste audit. The County could also provide a list of professional consultants who perform waste audits.

Another form of direct assistance by the County could involve consultations on hazardous waste reduction during routine hazardous waste regulatory inspections. Ventura County indicates that these additional efforts during the course of an inspection would increase overall inspection time by 5 to 25 percent, depending on the size and condition of the company. A waste reduction consultation could consist of an inspection of existing on-site hazardous waste management practices and recommendations as to how waste might be reduced. Such an inspection would determine, for example, if appropriate wastes are being recycled, if wastes are segregated to promote recycling, and if spills and leaks can be avoided in operations and storage.

c. Coordinate Available Funding

The County could help companies finance waste reduction programs by coordinating information on funding sources. Six possible funding mechanisms identified in this paper include: (1) grants, (2) loan guarantees, (3) interest subsidies, (4) State-issued loans, (5) tax credits and (6) tax deductions. The County could provide detailed information on each of these funding sources including the specifics regarding application process and eligibility criteria. Such information could be incorporated into brochures for distribution directly to firms, or made available at the previously suggested County waste reduction library.

2. Regulatory Approach

If a regulatory approach is pursued, the measures should be designed to facilitate waste reduction, while not placing an unreasonable burden on individual firms. Options may include: (1) formal County policy to promote waste reduction, (2) requiring submittal of a waste reduction plan, and (3) fee incentives. In any case, these measures should be reinforced and supported by non-regulatory efforts.

a. Formal County Policy to Promote Waste Reduction

San Mateo County could adopt a formal policy promoting waste reduction. This could take the form of a local resolution that the County promote practices and technologies that reduce the use of hazardous substances and the generation of hazardous wastes. To implement this policy, for example, when purchasing goods, the County could direct its business towards companies that have reduced their hazardous waste generation.

b. Require Submittal of Waste Reduction Plan

Each hazardous waste generating firm could be required to submit a waste reduction plan. This approach, however, may prove infeasible to administer and further encumber small business (the sector with the fewest options for waste reduction). As an alternative, the County could regulate the largest generating firms (e.g., those which generate over 50 tons of hazardous waste per year) by requiring them to submit to the County a hazardous waste reduction plan. To augment this, the County could request voluntary participation from small generating firms.

Two California counties that have pursued a regulatory approach are Ventura and Santa Cruz.

(1) Ventura County

Ventura County currently requests, but does not require, that all generators who transport hazardous waste under the State's Uniform Hazardous Waste Manifest submit to the County a description of the waste reduction program that they indicate they have in place by signing the manifest. Communication with County staff indicates that the lack of a formal requirement for existing firms to submit a waste reduction plan has not hampered the County's waste reduction efforts. Most of the firms are cooperative in supplying the County with information about their waste reduction programs. In addition, Ventura County has prepared a draft ordinance which will require all new hazardous waste generating industries to submit a waste reduction plan to the County.

(2) Santa Cruz County

Santa Cruz County allows its health officers to independently determine on a case-by-case basis which hazardous waste generators will be required to submit a waste reduction plan to the County. A targeted firm's operating license is conditional upon County approval of the submitted waste reduction plan. The first step that the County requires is that the firm conduct an internal waste audit. Approximately ten firms in Santa Cruz County have been required to submit a waste reduction plan. Most of these firms are large quantity generators.

c. Fee Incentives

The County could provide both positive and negative economic incentives to encourage firms to implement waste reduction measures. Positive incentives could include fee reductions in the County's generator identification (M.O.U.) program for firms that significantly implement waste reduction. Negative incentives could include increased generator fees tied to the amount of waste generated, and penalties for firms that fail to submit required waste reduction plans.

The potential long-range benefits of waste reduction in San Mateo County are significant. Whatever the mix of approaches applied, however, it is crucial that industry and businesses be adequately informed of the resources that the County has to offer. In addition to direct communication with firms, the County should attempt to get media coverage of its hazardous waste reduction program. Press coverage which emphasizes hazardous waste reduction success stories will be particularly effective in sparking industry's interest in waste reduction. Publicity for the County's program should be given high priority if the County's resources are to be of significant benefit to industry.

# Small Quantity Generators

Commercial/Industrial

Household

Program Options



## SMALL QUANTITY GENERATORS

A goal of the Hazardous Waste Management Plan is to improve the waste management capability for small quantity generators. Small quantity generators are defined as businesses and households that produce less than 12 tons of hazardous waste per year. Individually, hazardous waste from small quantity generators may not appear significant but, collectively, it represents a critical component of the total waste stream, particularly when such wastes are likely to be disposed of improperly, i.e., in a municipal landfill or sewer.

While many County businesses are acting responsibly in management and disposal of hazardous wastes, others tend to be unaware of State regulations applying to them. Often such firms do not have the resources, technical expertise or personnel to manage their hazardous waste effectively or legally. Households also are constrained by the lack of convenient and inexpensive disposal options.

This chapter will be divided into three sections. The first two involve commercial and industrial small quantity generators, and household small quantity generators. Each of these sections will overview the current situation, analyze opportunities and constraints to effective hazardous waste management, and assess current County regulatory efforts. The third section will formulate a set of options for an improved small quantity generator program within the County.



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Commercial/Industrial



## COMMERCIAL AND INDUSTRIAL SMALL QUANTITY GENERATORS

### 1. Current Situation

Businesses which generate small quantities of hazardous waste include small industrial, commercial and institutional generators, such as painters, printing shops, electroplating companies, electronic component manufacturers, gas stations and repair shops. Such firms can generate strong acids, heavy metals, oil and grease, organic solvents, paints and pesticides.

Quantitative data on hazardous waste generation by small quantity generators is difficult to secure. With respect to small businesses, the County Health Department's inventory efforts have identified 995 firms which may be defined as small quantity generators. The Department considers its efforts as 80% complete; therefore, approximately 1,250 such firms are presumed to exist in San Mateo County. It is estimated that these firms generated 12,345 tons of hazardous waste in 1986. Predominant wastes include waste oil, solvents and miscellaneous wastes.

While business is generally acting responsibly to assure proper management of the hazardous wastes it generates, evidence suggests that illegal disposal does continue. Though the exact extent is unknown, numerous incidents of illegal disposal have been investigated in the County. There is particularly a growing number of roadside illegal dumping incidents within the County rural areas. Other forms of illegal disposal include unlawful sewer discharge and municipal landfill disposal.

Illegal disposal activities can have severe environmental and public health consequences. Roadside and municipal landfill dumping endanger both ground and surface water supplies, and can cause serious injuries to landfill workers. Illegal sewer discharge may destroy necessary sludge lagoon bacteria, and cause illnesses among plant employees.

### 2. Opportunities and Constraints for Effective Management

#### a. Constraints

##### (1) Lack of Knowledge

Many small quantity generating firms are unaware that they produce hazardous waste, and therefore are uninformed about federal and state hazardous waste regulations which pertain to them. In 1985, the Association of Bay Area Governments (ABAG) surveyed 67 small businesses about their management of hazardous wastes and their attitudes on alternative disposal options. Over half of the businesses contacted were unfamiliar with federal and state hazardous waste regulations. Even those small quantity generating firms who knowingly dispose of their hazardous wastes illegally are often unaware of the enormous threat they pose to the public health.

(2) Lack of Technical Expertise and Resources

Due to small number of employees, and sometimes limited training, many small quantity generating firms are unfamiliar with existing waste reduction methods, such as recycling, raw material substitution and process changes. Also, the high cost of legal hazardous waste disposal may appear prohibitive, thus inducing firms to dispose of their wastes illegally. For example, waste oil can cost from \$40 to \$50 per 55 gallon drum to recycle, while chlorinated solvents may cost between \$450 and \$750 per 55 gallon drum to treat.

It has been shown that recycling, minor process changes, good housekeeping, and other forms of waste reduction offer potential for long-term cost savings due to increased operating efficiency and lower disposal costs. However, techniques such as major process changes and raw material substitution can often be capital intensive. This is a barrier to small quantity generators who usually do not have the financial resources of large generating firms. In addition, small businesses are often dependent on other firms for supply of raw materials and, hence, do not have the flexibility of large firms to substitute raw materials.

(3) Lack of Incentives

Unfortunately, the high cost of proper hazardous waste management and major forms of waste reduction have not, until recently, been counteracted by significant incentives, positive or negative. Positive incentives could take the form of tax reductions or utility credits, while negative incentives involve increased enforcement. Recent enforcement efforts by the County and State have increased markedly. This has not been balanced by sufficient positive incentives.

b. Opportunities

(1) Identification of Small Quantity Generators

Little can be done to curb illegal disposal practices until all small quantity generating firms have been identified. Identification is the first step toward enforcement. Once identified, small quantity generators can be targeted for various educational, informational and assistance programs. Potential methods to identify small quantity generators include:

- (a) Public notice in the local news media.
- (b) Consultation with the Chamber of Commerce, trade associations and civic groups.
- (c) Direct questionnaire mailing.
- (d) Telephone or personal interviews.

- (e) Estimations from secondary information sources such as local tax records, business license application files, industrial directories and commercial mailing lists.

## (2) Educational/Informational Assistance

Once identified as a hazardous waste generator, firms must be informed of their responsibility toward proper management. This involves: (1) identifying the hazardous components of their waste stream, and (2) informing firms of the relevant state and federal regulations which apply to them. This may be done through direct notification or inspection efforts.

In addition to informing firms about relevant regulations and appropriate methods of disposal, it is important that firms fully understand their waste reduction options. The method of waste reduction which offers the most promise for small quantity generators is instituting minor process changes (also known as "good housekeeping") such as inventory control, waste segregation, and frequent and effective equipment maintenance. These practices are easily implemented and not capital-intensive.

Numerous opportunities exist for informing business of its hazardous waste management responsibilities and options. These include:

- (a) Preparation of a simple pamphlet containing step-by-step instructions on proper management of hazardous wastes. Such a pamphlet could include instructions on record keeping and filling out manifests, as well as discuss treatment, storage and disposal options.
- (b) Establishment of training seminars, conferences and workshops conducted by the State or County health personnel to provide businesses or trade groups with information regarding applicable hazardous waste regulations, waste reduction options, and recycling and treatment alternatives.
- (c) Preparation of regular hazardous waste newsletters and pamphlets which update businesses on changes in regulation and treatment or waste reduction options.
- (d) Establishment of a hazardous waste information clearing-house, with 24-hour hotline and referral service.
- (e) Development of ongoing training programs for County health personnel involved in the inspection of small businesses and the enforcement of hazardous waste regulations.

## (3) Technical Assistance

Concurrent with opportunities to disseminate information, technical assistance on waste reduction options could also be provided. This may involve development of waste reduction plans for

groups of small generators in similar situations, or on-site assistance in the preparation of a waste audit. These functions could be incorporated into a regular inspection program. Technical assistance can be beneficial to small quantity generators since lack of financial resources and general awareness of their status as a waste generator have been identified as key constraints.

(4) Increase Convenience and Reduce Costs of Waste Disposal

Another approach to encourage proper disposal of hazardous waste by small quantity generators is to increase the convenience and reduce the costs of waste disposal. One means to accomplish this could be the provision of an in-county transfer station where wastes could be collected and segregated prior to shipment to a disposal or treatment facility. This approach would reduce costs through aggregating wastes into larger lots before shipment. Alternative scenarios could include facilities which, to varying degrees, incorporate waste transfer, recycling and treatment capability. Such a facility may accept only commercial hazardous waste, or be designed for use by both businesses and households. In addition, a regular waste collection service which would serve such a facility could be considered.

Financing for a small quantity generator facility and/or collection service could be directly assumed by the County or by the waste generators themselves, or a combination of both. Payment could possibly be through an assessment district or direct user fees. Alternatively, such an operation could be conceived, designed and operated exclusively by a private firm.

(5) Create Positive Incentives

Creating positive incentives can encourage proper management of hazardous waste and establishment of waste reduction efforts by small quantity generators. Firms which properly dispose of their hazardous waste or can demonstrate successful waste reduction could, for example, be compensated in the form of a tax or utility fee credit or acknowledged through public recognition or awards programs.

3. Current San Mateo County Generator Identification (MOU) Program

a. Introduction

In August 1983, the San Mateo County Board of Supervisors adopted a resolution authorizing a Memorandum of Understanding between the State Department of Health Services and the County Health Department on matters concerning hazardous waste enforcement authority. Under the terms of the Memorandum, the County Health Officer is designated the State agent who enforces certain minimum standards and regulations controlling hazardous waste facilities. This includes monitoring facilities which are primarily small quantity generators, and where hazardous waste is stored less than 90 days.

The County maintains authority to enter and inspect a factory, plant, construction site or other areas where wastes are handled, and gather evidence to determine whether the waste is hazardous. Pursuant to the Memorandum of Understanding, the County Health Department (Environmental Health Section) has undertaken a program of comprehensive identification and licensing of hazardous waste generators within San Mateo County.

b. Identification Efforts

Initial information sources used by the County to identify potential waste generators included the telephone directory, business contact guides, and chamber of commerce records. To verify waste generation activities, questionnaires were sent out, followed by site inspections. This field exercise allowed inspectors to identify other hazardous waste generating firms in the immediate vicinity. As of September 1987, approximately 995 hazardous waste generating firms were registered with the program, most of whom were designated small quantity generators. Identification efforts are approximately 80% complete.

c. Regulation and Enforcement

The program divides the County into ten geographic districts. Each district is assigned an inspector who is a trained hazardous materials specialist. The inspection process usually involves visual examination of storage and work areas as well as production equipment, to ensure proper handling of hazardous materials and wastes on the premises. In addition, administrative records are reviewed and, where necessary, firms are instructed on operating changes which must be instituted for legal compliance with State storage and transport requirements. Should site contamination be discovered, clean-up activities are to be initiated at the firm's expense. Inspected firms are assessed a fee, based on amount and type of waste generated, and are issued a certificate of inspection. Any non-compliant firm resulting from this process would be referred to legal counsel for further enforcement or judiciary review.

d. Information and Education

The information and education component of the County program consists primarily of the mailing of condensed descriptions of regulatory requirements during the identification phase of the program, and responding to inquiries pertaining to hazardous materials management. To better inform firms not currently registered with the program and provide updated information to registered firms, more developed and ongoing information outreach efforts could be established.

e. Technical Assistance

Current technical assistance efforts occur during site visitation and facility inspection. Firms which are interested in waste reduction or recycling can consult directly with the inspector at that time. Occasionally, an inspector may revisit to further provide technical

assistance. District inspectors, however, are limited by their extensive workloads. With approximately 1,000 waste generating firms and only ten inspectors, a firm may be required to wait up to a year for technical assistance from the County.



Household



## HOUSEHOLD GENERATORS

### 1. Current Situation

The typical household hazardous waste stream consists of pesticides and herbicides; automotive products such as motor oil and anti-freeze; cleaners and household chemicals, paint products and solvents; pool acids and hobby supplies such as photographic chemicals. It is estimated that approximately 6,345 tons of hazardous waste was generated by County households in 1986.

There is a limited level of awareness among the public regarding household hazardous waste which, in turn, leads to improper disposal. Most household hazardous wastes are transported to municipal landfills ill equipped to handle toxics, while others are disposed of in storm drains and sewer systems as well as vacant lots and backyards.

Current proper disposal options are few. Waste oil can be taken to service stations, and pesticides and herbicides are collected by the County Agricultural Commissioner. Other hazardous wastes must be brought to an out-of-County facility, and are subject to significant disposal fees. The sheer complexity of proper disposal of household hazardous waste, plus the current cost structure, creates a formidable obstacle to household generators. In past years, the County has sponsored several successful household hazardous waste collection events, and proposes additional events this year.

### 2. Opportunities and Constraints for Effective Management

#### a. Constraints

##### (1) Lack of Knowledge

Many people are unaware that their homes contain hazardous wastes and, thus, are uninformed of the hazardous waste regulations which pertain to them. A 1985 ABAG survey of 295 households in the cities of Hayward, San Rafael and San Francisco determined that the average annual amount of hazardous waste improperly disposed of per household ranges from 1.8 to 3.5 gallons. This translates to roughly 14,700 to 28,980 tons disposed of improperly in the Bay Area every year.

##### (2) Lack of Convenient Disposal Options

Households desiring to legally dispose of their hazardous waste may find that it is often difficult to do so. Collection programs are few, and those which do occur may be scheduled on inconvenient days and the wait may be several hours long. Many people may be turned away, as was the case at a collection event held in San Mateo County in April 1986.

Another difficulty arises from the waste specialization requirements of the disposal outlets which are available. Presently, a household may take only waste oil to a service station, and only pesticides and herbicides to the County Agricultural Commissioner.

(3) High Cost of Proper Disposal

To properly dispose of household hazardous waste, San Mateo County citizens must transport their household wastes (other than waste oil and pesticides and herbicides) outside of the County to an industrial treatment facility in Contra Costa County. In addition to distance, this involves a substantial fee which acts as a disincentive for proper disposal of household hazardous wastes.

b. Opportunities

(1) Educational/Informational Assistance

Due to limited awareness of the environmental and health threats posed by household hazardous waste, numerous opportunities exist to inform the public of: (1) how to identify household hazardous waste, (2) how to properly store, transport and dispose of the waste, and (3) what non-hazardous alternatives may be substituted for conventional household products. These include:

- (a) Preparation of an informational brochure identifying household hazardous wastes and describing appropriate storage and available disposal options. Such a brochure could be widely distributed either as an insert in utility bills or newspapers, or strategically placed in key public places or commercial outlets.
- (b) Development of a media outreach program which includes press releases and public service announcements.
- (c) Establishment of a 24-hour telephone hot line in conjunction with a general hazardous waste information clearinghouse.
- (d) Placement of signs or placards, which discourage illegal disposal of household hazardous waste, on refuse trucks and rubbish containers.

In addition to reaching the consuming adult public, raising the awareness of school age children may also be beneficial. Appropriate information could be incorporated into primary and secondary school curricula.

(2) Increase Convenience and Reduce Costs

Opportunities exist to increase the convenience and reduce the costs of proper disposal of household hazardous waste. These include establishment of: (1) a permanent, local transfer station, (2) regular "waste collection" events, and (3) a residential hazardous waste collection service. In a transfer

station, wastes are collected and segregated prior to recycling or shipment to a hazardous waste management facility. Waste collection events provide the same function but are temporary in nature. A residential hazardous waste collection service would provide households with a pick up and transport service.

A permanent transfer station is preferred to waste collection events for two reasons. First, a permanent facility provides service on a regular basis and therefore eliminates possible conflicts between the timing of collection events and household schedules. Second, this form of operation is less expensive to manage because start-up costs are incurred only once and personnel requirements can be reduced due to a predictable and regular rate of use. A variant of the transfer station approach could include establishment of a single facility for serving households and small quantity waste generating businesses.

A residential hazardous waste collection service could take two forms: (1) a curbside collection service, or (2) door-to-door pick up by appointment. Both have the advantage of simplifying disposal considerably for households. However, both also have significant disadvantages. Curbside pick up could involve leaving hazardous waste, like ordinary refuse, on the curb for regular pick up. Such practice would increase chances of accidents, and raise the potential for exposure of hazardous waste to children and animals and the possibility of the waste being struck by passing vehicles. Correspondingly, the County's liability may increase should a curbside collection service be implemented. A door-to-door pick up would eliminate many of these dangers, but would still require that the hazardous waste be transported by trained, authorized personnel with whom the County would have to contract. For these reasons, the County Health Department encourages that a transfer station/collection event approach be pursued without a residential waste collection component.

### 3. Current San Mateo County Household Hazardous Waste Regulatory Efforts

#### a. Introduction

Household hazardous waste is not formally regulated by either federal, state or county statute. However, as it can pose a significant environmental and public health threat, San Mateo County has established a household hazardous waste program consisting of both informational and waste collection efforts.

#### b. Information and Education

In 1981, an informational brochure was developed which describes typical household wastes and appropriate means of disposal. Copies were distributed to numerous city government agencies within the County, including libraries and other public offices. The brochure is currently available from the County Health Department (Environmental

Health Section) and has been updated to contain recommended alternatives to hazardous household products. A copy of the current brochure is attached in the Appendix. Due to a general low level of awareness of household hazardous waste by the public, more developed and ongoing information outreach efforts could be established.

c. Disposal Assistance

To reduce the inconvenience of disposal of household hazardous wastes, the County has provided disposal assistance primarily in two forms: (a) service stations throughout the County have been designated as specific waste oil collection centers, from which the County has arranged free pick up by a recycler; and (b) in 1985, the County initiated a series of collection events, paid for with monies generated from municipal landfill disposal revenues. The events were administered by trained personnel from the Division of Public Health (Environmental Health Section). Two collection days were held in both 1985 and 1986, during which people could drop off their accumulated household hazardous wastes. Both events were held in different parts of the County on subsequent weekends. In particular, the 1986 event drew over 450 households, and was the largest ever in the State.

The resounding popular support for past collection events helped identify certain problems to be considered before initiating subsequent similar events. First was the high cost. Because of limited personnel and large volumes of waste, waste segregation was difficult and no recycling occurred. All hazardous wastes, therefore, required specialized packing for transport to designated management facilities, resulting in a mean cost of over \$200 per household. This compares unfavorably with an average cost of \$88 per household, as derived from a similar collection event that year in Alameda County.

A second problem is that because of the overwhelming response which exceeded available resources, people with hazardous waste had to be turned away. Those who were successful had to wait in long lines. Moreover, the collection of such large quantities of hazardous waste in one confined area increased the chance of an incident such as mixing of incompatible waste or ignition of flammables.

In response to these problems, the County is proposing to conduct a series of smaller scale collection events to be held on a regular, periodic basis, starting in Mid-1989. Collection will be by appointment and will occur only during specified four-hour time blocks. Waste quantities should, therefore, be smaller than full scale collection days, and both recycling and more efficient consolidation of hazardous wastes will be feasible. Such efforts should reduce costs to approximately \$26 per household. In addition to significant cost savings, smaller scale collection events will also assure that all wastes are handled in an environmentally safe manner.

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## Program Options



## SMALL QUANTITY GENERATORS PROGRAM OPTIONS

Three general areas of opportunity have been identified whereby a public agency, such as San Mateo County, could assist small quantity generators in their management of hazardous waste. These are: (1) identification of waste generating firms, (2) educational and technical assistance, and (3) increased convenience and reduced costs of waste disposal. This section will identify and discuss the range of options for inclusion in a small quantity generator program.

### COMMERCIAL AND INDUSTRIAL SMALL QUANTITY GENERATORS

#### 1. Identification of Small Quantity Generating Firms

The County's comprehensive effort toward identification of hazardous waste generating firms is considered 80% complete. Aggressive measures should be taken to identify the remaining waste generating firms and ensure that they are in compliance with applicable State and local regulations. Identification of the existing non-registered firms could be assigned to a team of Health Department personnel specifically assembled to scrutinize Chamber of Commerce records, business contact guides, and the telephone directory for prospective waste generating businesses. A comprehensive street-by-street survey in likely candidate areas could be undertaken. New hazardous waste generating firms could be identified by coordinating with the cities in the County to require firms to complete a hazardous waste generation questionnaire as part of the application procedure for business license. This technique would ensure reliable and complete registration of any new hazardous waste generating firms.

#### 2. Educational/Informational Assistance

The County should focus on informing small quantity hazardous waste generating firms of their responsibility toward proper hazardous waste management. This involves: (1) identifying the hazardous components of their waste stream, and (2) providing information regarding the relevant State and federal regulations which apply to them. In addition to the one time County mailing during the identification process, and information provided during regulatory inspections, more developed and ongoing information outreach efforts could be established.

A convenient means of providing hazardous waste management information could be the development of an information clearinghouse. Such a resource center could assemble reference materials on waste reduction techniques, storage, transport and treatment options, and relevant State and federal regulations. An informational library should be staffed by or located near experts, such as County Health Department personnel. The library should be centrally located for convenient Countywide access. In addition, a hazardous waste "hot line" telephone number could be established for people to call in and receive answers to questions over the phone. This would allow increased usage of the County's information supply.

In conjunction with the recommendations made in the chapter on waste reduction, conferences and industry specific technology transfer workshops could also target small quantity hazardous waste generating firms for attendance. The County could, alone or in concert with other public agencies or industry, sponsor meetings and conferences which provide technical guidance on implementing a hazardous waste reduction program. Advice on instituting small process changes, such as improved housekeeping and maintenance practices, would be especially beneficial for small firms because of their limited resources.

Other educational efforts should include the preparation of a simple, yet comprehensive, pamphlet containing step-by-step instructions on proper management of hazardous wastes. Such a pamphlet could include information on record keeping and filling out manifests, as well as discuss treatment, storage and disposal options. The availability of a hazardous waste informational clearinghouse and telephone referral number should be described in the pamphlet as a reference for updates on the latest changes in regulations and treatment or waste reduction options.

The pamphlet should be aggressively distributed to firms, either through the inspection process or through business organizations and trade groups.

The pamphlets, in concert with the informational clearinghouse, would provide immediate assistance to small quantity generating firms, who otherwise may find themselves waiting up to a year for technical assistance from the County inspectors during annual site visits.

### 3. Increase Convenience and Reduce Costs of Waste Disposal

Another opportunity identified to encourage proper disposal of hazardous waste by small quantity generators is to increase the convenience and reduce the costs of waste disposal. One means to accomplish this could be the provision of an in-County transfer station where wastes could be collected and segregated prior to shipment to a disposal or treatment facility. This approach would reduce costs through aggregating wastes into larger lots before shipment. A transfer station could be financed and operated by the County in a similar fashion to a public utility, charging a service fee, but operating as a non-profit business. A less financially encumbering option would be for the County to solicit a private contractor to establish and operate such a facility.

## HOUSEHOLD GENERATORS

### 1. Educational/Informational Assistance

The County should focus on informing households of: (1) how to identify household hazardous waste, (2) how to properly store, transport and dispose of the waste, and (3) what non-hazardous alternatives may be substituted for conventional household products. As previously indicated, the County has developed an informational brochure which was distributed to numerous city government agencies within the County, including libraries and other public offices. To increase the general level of awareness of household hazardous waste by the public, the brochure should be more aggressively distributed. An additional means of distribution would be to

insert brochures in utility bills or newspapers. The County should also redistribute the updated brochures to key public places and commercial outlets.

Another educational option could involve providing household hazardous waste assistance in conjunction with the information clearinghouse, and telephone referral options discussed earlier in the waste reduction and small quantity generator sections. The telephone number could also be broadcast in public service announcements on radio or television programs as part of a media outreach effort.

## 2. Increase Convenience and Reduce Costs

Two opportunities have been identified to increase the convenience and reduce the costs of proper disposal of household hazardous waste: (1) a permanent, local transfer station, or (2) regular waste collection events.

The optimal solution, a permanent, local transfer station with regular staff, should be the County goal. The County is working toward this by pursuing the establishment of a "semi-permanent" transfer facility. This facility will: (1) be located at a single, accessible and well publicized site, (2) function on an appointment basis, and (3) be open only during specified four-hour time blocks. Waste quantities should, therefore, be smaller than full scale collection days, and both recycling and more efficient consolidation of hazardous wastes will be feasible.

Requiring appointments will also allow the County to instruct households on the proper packaging and transport of hazardous wastes to the collection site, and avert the risks and problems associated with people waiting long periods of time in their cars containing hazardous waste. In conclusion, the proposed operation will enable the County to serve the public in a more effective manner than during past efforts, and at the same time be able to measure demand and capacity for a future permanent facility.



# **Contaminated Sites**



## CONTAMINATED SITES

Contaminated sites involve sites where hazardous waste has been allowed to infiltrate into the soil or water supply. The sites may range from leaking underground storage tanks to abandoned disposal facilities, such as evaporation ponds or landfills. There are seven known contaminated sites within the County which are associated with past disposal practices. In addition, there are approximately 200 cases involving leakage from underground storage tanks which are related to recent or ongoing operations. This chapter will discuss relevant contaminated sites in the County and State and local efforts toward site cleanup.

### 1. Contaminated Sites from Past Disposal Practices

#### a. Background

The principal statutes governing cleanup of contaminated sites are the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as the "Federal Superfund," and its reauthorization legislation (SARA), as well as Hazardous Substance Cleanup Bond Act and Hazardous Substance Account, also known as the "State Superfund." Basically, the statutes establish a list of sites requiring cleanup, and allocate funds for cleanup, when a responsible party cannot be accounted for. To implement the State Superfund, the State Department of Health Services developed a site-specific expenditure plan as the basis for appropriating available funding. The plan identifies the hazardous waste sites targeted for cleanup during the next five years, and commits available resources. Within San Mateo County, seven sites are identified in the plan, one of which is also a candidate for the Federal Superfund - National Priority List.

Traditionally, the State Department of Health Services and San Francisco Regional Water Quality Control Board have taken the lead in coordinating cleanup activities at these sites, and the County maintained a more peripheral position. In recent years, however, with greater staffing and assessment capability, the County Health Department is assuming a more integral role in coordinating site remediation. Involvement presently consists of review and critique of remediation plans, and providing recommendations and technical input as partners with the State Department of Health Services and San Francisco Regional Water Quality Board.

#### b. Site Summaries

A summary analysis of each of the seven sites identified by the expenditure plan, including extent of contamination and proposed cleanup efforts, appears below:

(1) Rhone Poulenc/Zoecon (Sandoz Corporation), East Palo Alto

Sandoz Corporation maintains an agricultural pesticide manufacturing operation on a five-acre parcel in East Palo Alto, near a San Francisco Bay tidal marsh. There have been a series of previous property owners at the site, but current contamination is attributed to the Chipman Chemical Company and its successor, Rhodia, Inc., which produced arsenic-based pesticides between 1926 and 1971. The companies maintained an underground tank to store arsenic compounds, and a shallow evaporation pond for disposal of manufacturing by-products. Zoecon Corporation purchased the site in 1972, and became Sundoz Crop Protection Corporation in 1986.

Contamination on the site is extensive, though confined to several areas, and consists of soil contaminated with high concentrations of arsenic, as well as lead, mercury, cadmium, and selenium. Arsenic is also present in the brackish shallow groundwater on the site.

Between 1981 and 1985, site investigations identified the extent and range of contamination, and monitoring well systems were installed. Since 1986, several pre-cleanup evaluations have been prepared and submitted to the State Department of Health Services and Federal E.P.A., including a remedial investigation/feasibility study and remedial action plan. Investigations to date have involved the installation of over 60 monitoring wells and more than 400 soil samples.

An initial remedial action plan was submitted to the State Department of Health Services and Federal E.P.A. by Rhone Poulenc, the current successor of Rhodia, Inc. Rhone Poulenc is preparing a remedial investigation/feasibility study under a consent order between that firm and the State Department of Health Services and San Francisco Regional Water Quality Control Board.

Zoecon Corporation and Rhone Poulenc have borne all costs to date, and Rhone Poulenc is expected to assure the costs for final clean-up activities.

(2) Pacific Gas and Electric Company (PG & E), Martin Service Center, Daly City

The Pacific Gas and Electric Company operates an electric utility substation and service center on a 25-acre site in portions of Daly City and Brisbane, approximately 1/4 mile south of San Francisco and one mile west of San Francisco Bay. The principal contaminated portion of the site is known as the "Daly City Yard," and is currently used for material and equipment storage, and as a staging area for PG & E field crews.

Contamination on the site consists of soil and groundwater contaminated with organic compounds from a former gas manufacturing process that occurred on the site between 1905 and 1916. The

process, which separated gas from oil for the generation of electricity (gassification), produced as by-products condensed organic compounds, including phenols, asphaltenes, and polynuclear aromatic, hydrocarbons (PNAs), which were disposed of on-site.

The contamination was first discovered in 1980 by PG & E when grading a portion of the site for future construction. At that time, all known contaminated soil (approximately 1,150 cubic yards) was excavated and disposed of at both Class I and Class II disposal facilities.

Additional contamination was discovered at another location in the Daly City Yard during construction activities in 1980. Several months after the installation of an earthen berm and concrete slab, black viscous materials were observed welling up through cracks and joints. Remedial investigations of soil and groundwater in 1982 and 1987 confirmed the presence of organic compounds from the former gassification process. Soil and groundwater contamination from PNAs and benzene were identified at an adjacent area of the property, beyond the Daly City Yard. Investigations to date, however, have not completely identified the extent of contamination or groundwater migration pathways.

PG & E is currently working closely with the State Department of Health Services and San Francisco Bay Regional Water Quality Control Board toward preparation and implementation of a comprehensive remedial investigation to fully characterize the site. A system of groundwater monitoring wells has been installed. PG & E will continue to pay all costs associated with remedial investigations and site cleanup.

(3) Southern Pacific Railroad Company, Brisbane

The Southern Pacific Railroad Company operates a railroad switching yard on a 600-acre site in Brisbane, approximately 1/3 mile west of San Francisco Bay, over a potentially usable groundwater source. The principal contaminated portion of the site is approximately 100 acres, and was used primarily for railroad maintenance and machine shop operations, between 1914 and 1960.

Contamination on the site consists of soil and groundwater contaminated with heavy metals, including chromium, arsenic, copper, lead, and zinc, as well as oil and chlorinated solvents including trichlorosilane, trichloroethylene, and vinyl chloride. Contamination results from former land disposal activities.

In 1979, the State Department of Health Services began investigating the site for potential hazardous waste contamination. Remedial investigations to date have included 66 soil borings, 147 soil samples, and 51 groundwater monitoring wells.

The State Department of Health Services and San Francisco Regional Water Quality Control Board have determined that additional investigation is necessary to more comprehensively determine the extent of contamination. Upon approval of a remedial action plan, cleanup is estimated to last between 10 and 20 years. Southern Pacific has funded all investigations and is expected to bear the costs of remaining remedial activities.

(4) Willard Products, Redwood City

Willard Products has maintained a wholesale chemical repackaging and formulation business since 1967 on an approximately one acre site within an industrial park in Redwood City. The site is situated approximately one mile south of San Francisco Bay sloughs and wetlands, and is comprised of filled land over Bay muds.

Contamination on the site consists of soils and groundwater contaminated with pentachlorophenol, creosote compounds, copper, and assorted volatile organics, including acetone, xylene, methyl ethyl ketone and methanol. The contamination resulted from spillage from mixing and holding tanks that occurred over time.

Remedial investigations conducted between 1983-1985 indicate that the contamination is contained on-site, and that there is a low potential for off-site migration. Groundwater monitoring wells have been installed.

Between May 1987 and April 1988, Willard Products submitted two feasibility studies and a remedial action plan for cleanup of the site. The State Department of Health Services is currently reviewing the most recent of these reports. Willard Products will continue to pay all costs associated with remedial investigations and site cleanup.

(5) Wildberg Brothers/Healy Tibbits (Boliden-Metech), South San Francisco

Boliden-Metech Company occupies a 15-acre site in South San Francisco. Between 1907 and 1980, the site was used for a metal refining and smelting operation (Wildberg Brothers). The company maintained an on-site storage lagoon for disposal of manufacturing by-products. During heavy rainfall, the lagoon would overflow onto a neighboring property (Healy Tibbits) and contaminate surrounding soils. The Healy Tibbits site is currently used as a yard for a construction company. Boliden-Metech purchased the Wildberg Brothers property from an intervening owner (Refinement International, Inc.).

Contamination on both properties consisted of soil contaminated with cyanide and heavy metals, including chromium, copper, nickel, lead, and zinc. Contamination was first discovered in 1981. In 1982, Refinement International prepared a site characterization study and remedial action plan for the San Francisco Regional

Water Quality Control Board. The plan included procedures to drain the storage lagoon, dredge the contaminated sediment, and remove slag piles. All remediation work was completed in October 1982. Refinement International bore all costs for site cleanup. The State Department of Health Services may require additional groundwater monitoring or further remedial action before removing the site from the expenditure plan list.

(6) Homart Development Company, South San Francisco

In 1980, Homart Development Company purchased a 117-acre site in South San Francisco, approximately 1 1/2 miles west of San Francisco Bay. Between 1903 and 1978, the site was used for steel production and galvanizing (Bethlehem Steel Corporation), and wire and net manufacturing (Edwards Wire Rope Company).

A portion of the site consisted of soil contaminated with heavy metals, PCB's, copper, lead, zinc, and other wastes associated with the former steel and wire rope manufacturing operations. Between 1982 and 1984, the site was cleaned up to the satisfaction of the State Department of Health Services. Remediation included transport of 730 cubic yards of contaminated soil from the site. Approximately 15 acres is currently in the operation and maintenance phase, a post cleanup classification whereby regular groundwater monitoring occurs for a period of time to confirm that remedial work has been successful. Homart Development Company has borne all costs associated with site cleanup. No further remedial work is anticipated.

(7) Sun Chemical Corporation (U.A. Local 38 Pension Trust Funds), South San Francisco

The Sun Chemical Corporation operated a printing ink manufacturing facility on a four-acre parcel in South San Francisco between 1927 and 1978. The site is located approximately one mile east of San Francisco Bay, near Colma Creek which carries surface runoff into the Bay. The property has undergone several changes in ownership since 1978, and was most recently purchased by a labor union (U.A. Local 38) in 1981. The site is presently vacated.

Contamination on the site consisted of soil contaminated with cyanide and heavy metals, including lead and zinc. The contamination resulted primarily from disposal into abandoned tanks and sumps found on the site.

In 1981, the State Department of Health Services inspectors evaluated the site, and in 1983 Sun Chemical conducted an extensive surface soil investigation. Between 1985-1986, a remedial action plan was approved and the site was cleaned up to Department of Health Services and County Health Department satisfaction. Cleanup included removal of abandoned tanks and sumps, and excavation of contaminated soil. After undergoing a post-remediation monitoring program, the site is scheduled for removal from the Department of Health Services list. Sun Chemical and U.A. Local 38 have borne all costs associated with site cleanup.

In summary, remediation is complete at three sites (Sun Chemical Corporation, Wildberg Brothers/Healy Tibbits and Homart Development Company), and the remaining four sites are undergoing various phases of cleanup. Review of relevant documentation related to each site including: (1) preliminary site assessments, (2) remedial investigation analyses, (3) feasibility studies, and (4) site remediation plans--indicates that three of the remaining four sites will be cleaned up using exclusively on-site methods and, therefore, will not generate hazardous waste for off-site disposal. The fourth site (PG & E, Martin Service Center) will generate approximately 114 tons of contaminated soil requiring off-site disposal, as detailed in the Projected Waste Stream Chapter.

## 2. Contaminated Sites from Existing or Ongoing Operations

The predominant source for contamination from existing operations is underground storage tanks. The growth of industry on the Peninsula has led to increased storage of toxic chemicals in underground tanks. Within San Mateo County, there are an estimated 1,500-2,000 underground storage tanks, used primarily for petroleum products or solvents. Based on data from the San Francisco Regional Water Quality Control Board, 200 sites with leaking underground tanks are known to exist in San Mateo County. More than 40% of these sites involve service station operations, while the balance include various commercial or government facilities. The actual number of tanks will vary with type of operation, and the County Health Department estimates that approximately 370 tanks are associated with the 200 sites.

Issues of concern involve soil and groundwater contamination and migration of vapors through unsaturated soil. Approximately 12 of the 200 sites are located in a potential or known sensitive groundwater area, and one of these (Williamson Petroleum, Pescadero) has resulted in contamination of a primary drinking water source. The twelve sites are identified below:

1. Arco Service Station (Pacifica)
2. Caltrans Maintenance Yard (Half Moon Bay)
3. Chevron Service Station (Pacifica)
4. Curly and Reds Auto Repair (Half Moon Bay)
5. Customer Food and Liquor Company (Half Moon Bay)
6. Johnson Pier (Princeton)
7. San Francisco Juvenile Authority (La Honda)
8. Super 7 Service Station (Moss Beach)
9. Texaco Service Station (Pescadero)
10. Williamson Service Station (Pescadero)
11. Unocal Service Station (Pacifica)
12. Texaco Service Station (Woodside)

The County has assumed an ever-increasing role in the cleanup of leaking underground tanks. As a partner with the San Francisco Regional Water Quality Control Board, the County Health Department assumes primary oversight responsibility for identifying source of leakage, stopping the leakage, and remediation of contaminated soils or water.

In 1983, the County Board of Supervisors adopted an ordinance regulating storage of hazardous substances in underground tanks to protect against unauthorized discharge. Modeled after the Sher Bill, the ordinance requires: (a) local permit approval for new underground storage tanks to ensure maximum containment, (2) installation of the monitoring system for existing tanks, and (3) mandatory reporting of unauthorized leaks. The County Health Officer is charged with enforcement, and a variance procedure is provided.

### 3. Land Use Implications

Required disclosure of contaminated sites is the primary land use regulatory technique applied by local and State agencies.

#### a. State Measures

State Health and Safety Code Section 25359 requires that any non-residential property owner who knows, or has reason to believe that hazardous waste contamination exists on his property, must give written notice of the contamination to any subsequent purchaser of the site. In addition, the State Department of Health Services regularly requires a deed restriction which discloses that hazardous waste contamination occurs or has occurred on a site, and identifies what use restrictions of the property shall be observed.

#### b. Local Measures

In September 1986, the California State legislature adopted AB 4350 (Cortese) which requires: (1) the Governor's Office of Planning and Research to prepare a list of contaminated sites in each county, and (2) an applicant seeking development approval from a local agency to consult the prepared list and disclose in writing whether the proposed development is located on a contaminated site.

The most current list of contaminated sites, prepared by the Governor's Office of Planning and Research in March 1988, indicates 197 sites in San Mateo County. The sites are primarily from the San Francisco Regional Water Quality Control Board files, and mostly involve contamination from leaking underground tanks. Planning agencies throughout the County will be utilizing the list to develop local procedures to implement AB 4350.



# **Transportation Routes**



## TRANSPORTATION ROUTES

Truck transport is the primary form of hazardous waste movement within San Mateo County. Hazardous waste transit within the County is the result of both local and out-of-County waste generation. Since San Mateo County is both an exporter and importer of hazardous waste, and provides a key transportation link in the region, the potential for accident and release of wastes while in transit is significant. Because accidents involving hazardous waste can be very serious, the routes on which hazardous waste is transported should be chosen carefully in order to minimize the potential damage to people, natural resources and property.

### TRANSPORTATION NETWORK IN SAN MATEO COUNTY

#### 1. Existing System

San Mateo County's public road system includes nearly 2,000 miles of free-ways, highways, streets and roads, owned and maintained by State, County and local governments. Most of these roads are located in the urban corridor on the bayside of the County. There are four major highways in San Mateo County. These are:

- (1) Cabrillo Highway (State Route 1), which spans the County from north to south along the coast.
- (2) Junipero Serra Freeway (Interstate 280), crossing the County from north to south, along the periphery of the bayside populated urban area and beside the flank of the Santa Cruz Mountains on the west.
- (3) Bayshore Freeway (U.S. Route 101), also crossing the County from north to south, parallels San Francisco Bay passing through the most populous areas of the County.
- (4) Arthur Younger Freeway (State Route 92), crossing the County from east to west and linking the coastside with the bayside.

These highways, along with additional State expressways and highways, total approximately 210 miles and carry the highest volumes of traffic, including most through traffic. The Bayshore Freeway (U.S. Route 101) is the most heavily traveled in terms of truck traffic, although all of the four highways provide a route for transporting hazardous materials within the County, as well as providing links with San Francisco, Santa Clara, Santa Cruz and Alameda Counties. In addition, the Dumbarton Bridge (State Route 84) is a primary connecting link between Alameda County and the Bayshore Freeway (U.S. Route 101) for hazardous materials truck transport.

#### 2. Levels of Congestion

Congestion occurs along several arterials and freeway sections in the County during the morning and afternoon peak commute hours. Roads which

experience congestion during peak hours include the Bayshore Freeway (U.S. Route 101), El Camino Real (State Route 82), Arthur Younger Freeway (State Route 92), Woodside Road (State Route 84), as well as Ralston Avenue and Willow Road. Peak hours occur from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. on weekdays, when most work-related trips occur. Peak period truck traffic, in addition to automobile traffic, aggravates congestion. Congestion during non-peak hours sometimes results from traffic associated with sporting events, shopping centers or airports. San Francisco International Airport, for example, contributes to congestion on the Bayshore Freeway (U.S. Route 101) and local arterial roads near the airport. Many County roads, particularly the Bayshore Freeway, are approaching their maximum capacities. New development planned both in and adjacent to the County will further congest County roads. In addition, many local roads in the unincorporated area of the County are inadequate, and sometimes unsafe, due to poor sight distances and inadequate pavement widths. Map 13-1 identifies the major road network in San Mateo County, and highlights known areas of congestion.

## **CRITERIA FOR SELECTING A TRANSPORTATION ROUTE**

Transportation routes for hazardous waste should be selected according to criteria which minimize the risk to people from potential accidents. The transportation route selection criteria should consider: (1) the area through which a route runs, (2) physical and usage characteristics of the route, and (3) availability of emergency response assistance.

### **1. Area Characteristics**

Route selection should attempt to minimize the danger of transporting hazardous wastes by considering the environments through which hazardous waste must be transported. The primary emphasis is to avoid heavily populated areas. Therefore, routes for transport of hazardous waste should avoid residential areas, schools, hospitals and other intensely populated areas. Routes through environmentally sensitive habitats should also be avoided.

### **2. Route/Usage Characteristics**

Three of the primary ways to reduce the risk associated with shipping hazardous waste are to minimize: (1) the distance that hazardous waste is transported from point of generation to treatment facility, (2) the time the waste spends in transit, and (3) the number of people near the waste while in transit. The most direct route should always be encouraged, while routes which are congested and have high traffic volumes should be avoided. Areas which are usually congested, such as those adjacent to airports and sporting events, should also be avoided, if possible. In order to transport hazardous waste under the least crowded conditions, peak traffic hours, such as the morning and evening commute, should be avoided.

### **3. Emergency Response Availability**

Due to the ongoing prospect of an accidental discharge or spill, route selection should also consider the proximity and availability of emergency response assistance.

# SAN MATEO COUNTY GENERAL PLAN

## EXISTING ROAD SYSTEM

-  FREEWAYS
-  ARTERIAL HIGHWAYS
-  CONGESTED AREAS

SOURCE: CALTRANS, DEPARTMENT OF PUBLIC WORKS,  
SAN MATEO COUNTY



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
PLANNING AND DEVELOPMENT DIVISION · SAN MATEO COUNTY · CALIFORNIA



ROUTE 1 EXTENDS SOUTH  
TO THE SANTA CRUZ COUNTY LINE

## RECOMMENDED TRANSPORTATION ROUTES

Both intra-county and inter-county transportation of hazardous waste occurs within San Mateo County. It is important to distinguish between these two types of transport when recommending transportation routes because, although the overall goal of reducing risk is the same, the transit needs of each is different. Intra-county shipments, which begin and end within the County, will often need to utilize local roads in order to reach their destination. These shipments may come from many different locations within the County and, thus, routing must provide for sufficient flexibility.

Inter-county shipments, which traverse at least two counties, are less likely to require the use of local roads and, therefore, tend to use primarily State freeways and highways. These shipments often do not begin or end in the County and generally traverse the County along a single corridor. The intent of this section is to suggest routing which minimizes the risk associated with both intra- and inter-county hazardous waste transportation while providing enough flexibility for businesses to transport waste efficiently.

### 1. Intra-County Transport

For most intra-county transportation of hazardous waste, the Bayshore Freeway (U.S. Route 101) is the preferred north/south transportation route. Route 101 traverses the major industrial areas of the County. This industrial corridor produces most of the County's hazardous waste, and is where the County's existing commercial treatment facility is located and where new facilities are most likely to locate. For most hazardous waste shipments within the County, Route 101 will minimize the distance that the waste must travel. Although Route 101 is very congested during peak traffic hours, during non-peak hours it will minimize the time that hazardous waste spends in transit.

If a hazardous waste generation point were located nearer to the Junipero Serra Freeway (Interstate 280), this road would be the preferred north/south transportation route because it would minimize the distance and time of transit. Interstate 280, however, is located nearer to residential areas than Route 101, and is generally less accessible for emergency response service.

Should an east/west connection with Route 101 (or Interstate 280) be necessary, Routes 380 and 92 are the preferred transportation routes. Route 92 should be used to transport only hazardous waste from the coast-side to the bayside. Extreme caution must be exercised, however, as this route crosses over Crystal Springs Reservoir, which is a significant source of drinking water and part of the San Francisco State Fish and Game Refuge.

Roads connecting waste-generating sources and management facilities with Highways 101, 380 and 92 should be chosen according to the general criteria discussed in this chapter. In all cases, expressways and highways should be used rather than local roads which run through residential areas or past schools, hospitals or other institutions.

The Cabrillo Highway (State Route 1) is never preferred as a hazardous waste transportation route due to: (1) unstable conditions over the "Devil's Slide" landslide area, (2) a continuous two-lane road, and (3) summer fog conditions. El Camino Real (State Route 82) and Woodside Road (State Route 84) are not preferred routes except when they provide the shortest travel distance and are the most direct connection to preferred roads identified in this section.

## 2. Inter-County Transport

All inter-county hazardous waste shipments should remain on freeways and highways, and avoid local roads entirely except when needed to connect with waste-generating sources or management facilities. Ultimately, the preferred route for inter-county transport depends on the point of origin and destination of the hazardous waste. Route 101 or Interstate 280 would be preferred for transit between San Francisco and Santa Clara Counties, since these highways are the major north/south routes through the County.

### **LOCAL GOVERNMENT AUTHORITY TO REGULATE TRANSPORTATION OF HAZARDOUS WASTE**

Local government does not have the authority to regulate hazardous waste transport on State highways, except in tunnels and bridges. All State and federal highways are under the jurisdiction of the California Department of Transportation (Caltrans) with enforcement provided by the California Highway Patrol (CHP). Local authorities can, however, request the State to restrict the transport of hazardous waste on certain designated highways.

Local agencies have the authority to restrict the use of local roads for hazardous waste transport, as well as the time of transit, through adoption of an ordinance (State Vehicle Code Section 313041). State and federal government can, however, preempt a local restriction if it unduly restricts commerce and does not provide for alternate routes.

### **OPTIONS**

Generally, the State has not attempted to control the routes which may be used to transport hazardous waste, nor the time of day when such shipments may occur. Because local government's routing authority is severely restricted, very little enforceable routing on major roadways is likely to take place in San Mateo County in the near future. However, the County could restrict the times of day during which local roads can be used for transporting hazardous waste. This would, in effect, restrict transporters' access to major highways to certain times of the day.

Hazardous waste transporters will attempt to minimize the time and distance of their shipments out of business considerations. Therefore, transporters will often voluntarily choose the routes consistent with the criteria included in the plan. However, transporters cannot be depended upon to schedule their shipments during non-peak traffic hours. Therefore, since the County can regulate the time during which transporters have access to major routes, it may be appropriate for the County to restrict shipments to non-peak traffic hours, thereby reducing the probability that an accident involving hazardous waste will occur.

## HAZARDOUS WASTE HAULING REGULATIONS

The State Department of Health Services (DHS) maintains a comprehensive program to control transportation of hazardous waste. The program, mandated by the State Health and Safety Code, establishes a manifest system for the identification and tracking of each load of hazardous waste transported in the State, and a registration program for the identification of waste haulers and their vehicles. State law requires that hazardous waste may only be transported by a hauler with a Hazardous Waste Haulers License using an inspected and certified vehicle. Haulers require special training prior to becoming registered, and hazardous waste transporting vehicles must be inspected annually.

Under federal and State law, the California Highway Patrol is vested with primary authority to enforce the relevant hazardous waste transportation regulations. Its duties include assuring compliance with required vehicle and container specifications, as well as placarding, shipping documentation, and driver training requirements. The California Highway Patrol also performs annual inspections of hazardous waste transporting vehicles. Recent changes in State law extend enforcement authority to local police officers, as partners with the California Highway Patrol. The State Department of Health Services and the County Health Department, through their Memorandum of Understanding, also have authority to stop vehicles suspected of transporting hazardous waste illegally, and may inspect records.

# **Emergency Response**



## EMERGENCY RESPONSE

Hazardous materials are transported and stored in great volume each year throughout San Mateo County. Laws and regulations pertaining to the operation of vehicles transporting hazardous materials have been adopted to reduce the likelihood of accidents or spills. Despite intensive enforcement activity, occasional accidents involving hazardous materials will occur..

The potential hazards of accidental releases will vary widely depending upon the chemical properties of the materials involved. In all cases, it is important that the spill area be approached with extreme caution.

When hazardous spills or accidental releases occur, responses such as traffic control, source identification, technical assistance, decontamination, and clean up of the site may be required. Often spills cannot be handled by an individual or any single governmental body acting alone, but require the services and coordinated efforts of many agencies.

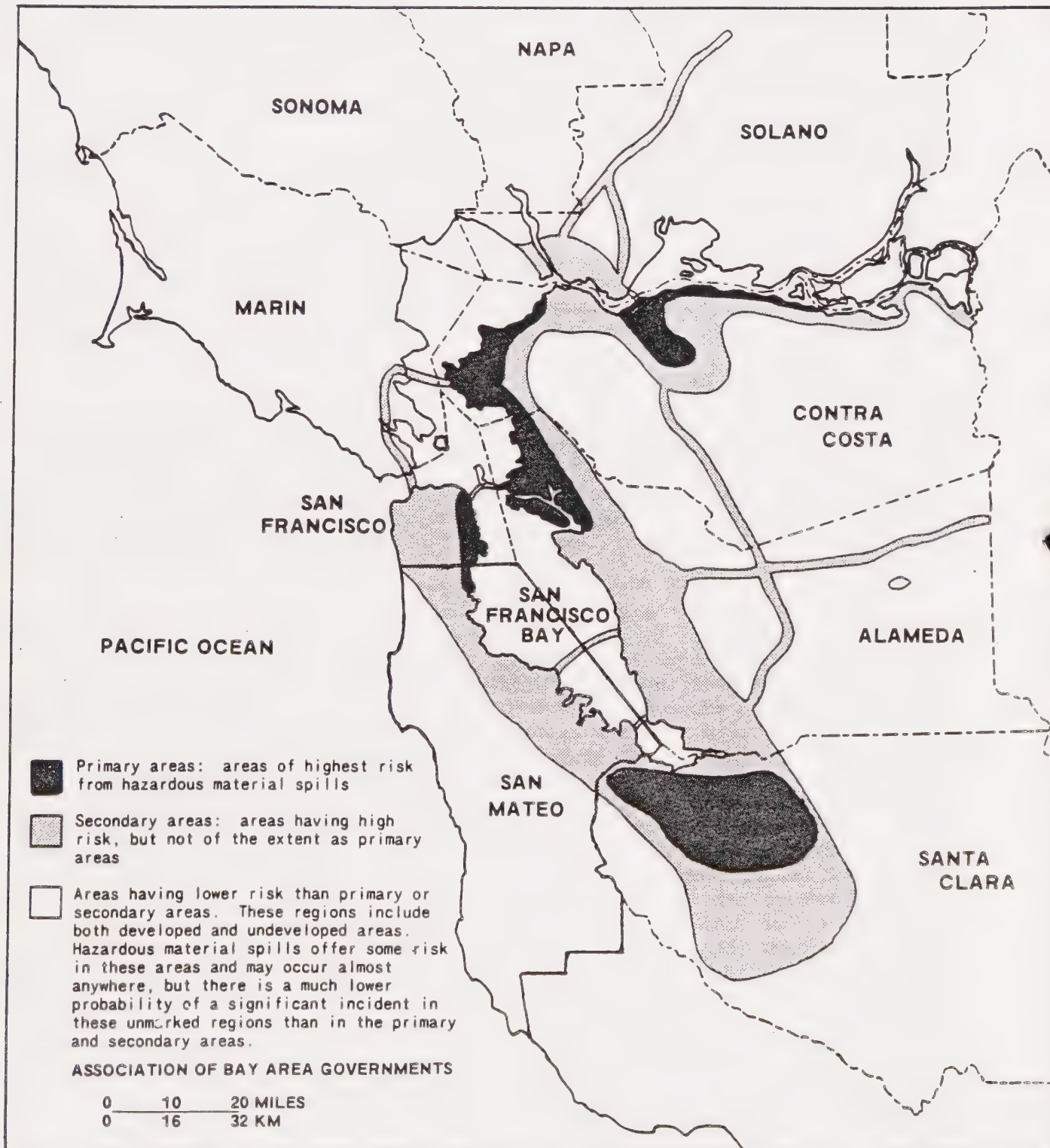
### SPILL POTENTIAL

The Bayside portions of San Mateo County host a number of industries closely associated with hazardous materials and risks of incidents. These include manufacturing of semi-conductors and related devices, paints, varnishes, lacquers, enamels, and chemicals and allied products. The coastal section of the County is less populated, rural, and comprised primarily of forested or agricultural land. There are concentrations of pesticides and related substances in this area.

Of the four major highways in San Mateo County (U.S. Route 101, Interstate 280, State Route 1, and State Route 92), the Bayshore Freeway (U.S. Route 101) is the most heavily traveled in terms of truck traffic. Each of the highways, however, is used for transporting hazardous materials within the County, and provides a link with San Francisco, Santa Clara, Santa Cruz and Alameda Counties. Paralleling the same general routes as the highway are lines of the Southern Pacific Railroad and natural gas pipelines. Major petroleum pipelines also cross the San Francisco Bay between San Mateo and Alameda Counties. Truck, rail and pipeline transfer facilities are concentrated in this region, resulting in considerable handling of hazardous materials. San Francisco International Airport is located in the northeast corner of the County and San Carlos Airport in the mid-east, both on San Francisco Bay.

The majority of recorded spills in San Mateo County occur on the urban Bayside. Most of these are clustered near U.S. Route 101. This area is near substantial residential development, placing a significant population at risk should a spill occur. In addition, the Highway 92 crossing at Crystal Springs Reservoir is used for transport of gasoline and agricultural chemicals to the Coastside, and has been identified as a potential hazardous material spill location which could seriously affect a major water supply. Map 14-1 summarizes those areas with potential for hazardous material incidents in San Mateo County.

Composite map identifying regions of highest risk from hazardous material spills in the San Francisco Bay Area.<sup>1</sup>



<sup>1</sup>Association of Bay Area Governments. San Francisco Bay Area Hazardous Spill Prevention and Response Plan, Volume 1, Issues and Recommendations, February 1983, pp. IV-14 and 15.

## EMERGENCY RESPONSE COORDINATION

### 1. San Mateo County Area Emergency Services Council

The San Mateo County Area Emergency Services Council maintains principal responsibility for emergency response coordination. The Council was established by a joint powers agreement between the County and its 20 cities, and is responsible for preparing for and responding to all major emergencies in the County. The Council oversees the Area Office of Emergency Services, which is staffed by emergency services personnel, and has the authority to command and coordinate local emergency forces during a state of emergency. A Countywide mutual aid agreement is currently in effect for general disaster preparedness and response services. The Council has adopted a Hazardous Materials Area Plan which establishes responsibilities and actions required to provide coordinated response to hazardous material incidents within the County. In the event of an emergency, the Area Office will coordinate requests for outside assistance and provide a mobile command post with driver, if required.

### 2. Hazardous Materials Area Plan

The purpose of the County Hazardous Materials Area Plan is to establish responsibilities and actions required to meet the County's and cities' obligation to protect lives, property, and the environment from incidents involving hazardous materials. To achieve this end, the plan: (1) defines the responsibilities and tasks of each participating agency responding to all hazardous materials releases or spills, and (2) provides a strategy for pre-emergency planning.

#### a. Coordinated Emergency Response

##### (1) Incident Command Authority

In defining responsibilities for coordinated incident response, the plan establishes a procedure to assign "incident command" authority. In general, the location of an incident or spill determines the incident command authority, as follows:

<u>Incident Location</u>	<u>Incident Command</u>
On federal/State highways and unincorporated roadways	California Highway Patrol
On other roads within cities that have formally delegated hazardous materials command responsibilities to the local fire department.	City Fire Department or District
On other roadways within cities that have not formally delegated hazardous materials command responsibilities to the local fire department.	City Police Department

Incident Location (Cont.)	Incident Command
On other roads within the unincorporated area of the County	San Mateo County Sheriff
Off-road locations in all cities	Local Fire Department
Off-road locations in unincorporated areas	San Mateo County Sheriff
Private property	Responding Fire Agency

## (2) Immediate Response Tasks

The plan establishes immediate response responsibilities for the emergency response unit which arrives on the scene first. In most urban spills, this would be the local fire agency. The responsibilities include:

- (a) Assess the situation and report to central communication.
- (b) Secure the impacted area from vehicle or pedestrian traffic.
- (c) Transfer charge to the incident commander upon arrival.
- (d) Establish an incident response command post.
- (e) Attempt to identify the spilled hazardous material based on written records.
- (f) Conduct rescue and lifesaving measures.

## 3. Hazardous Materials Response Team

A multi-agency hazardous materials response team is identified and assigned specific responsibilities.

### a. South County Fire Authority

The South County Fire Authority, a fire protection agency, responds to hazardous materials incidents Countywide through mutual aid agreements. South County Fire maintains a fully-equipped hazardous materials response vehicle which responded to over 90 hazardous materials incidents during a 12-month period in 1985-1986. The plan establishes responsibilities for South County Fire, which include: (1) providing initial site containment, (2) obtaining hazardous material samples, and (3) conducting preliminary analysis.

### b. Sheriff's Office

The responsibilities of the County Sheriff's Office include: (1) liaison with local police, (2) crowd and traffic control, and (3) evacuation support.

c. Office of Emergency Services

The responsibilities of the Office of Emergency Services include: (1) required notifications, (2) coordinating requests for special resources and personnel, and (3) maintaining an incident history file.

d. Environmental Health Section

The responsibilities of the Environmental Health Section include: (1) providing technical assistance for identification, sampling and monitoring of hazardous materials, (2) providing technical assistance regarding chemical properties, and (3) advising on questions of toxicity and health impacts.

e. Emergency Medical Services

The responsibilities of the County's Emergency Medical Services, or paramedic units include: (1) directing medical management of casualties, and (2) communicating with a designated base hospital.

4. Pre-Emergency Planning

The plan establishes a set of pre-emergency planning measures intended to facilitate effective emergency response. Key among these is the requirement that firms which store and use hazardous materials file a hazardous material inventory or "business plan" with the County Environmental Health Section. The inventory data is forwarded to local fire protection agencies, and added to a computerized database under development. Advance knowledge of the location and types of hazardous materials at a site can assist emergency personnel in the timely identification of spilled chemicals.

**PUBLIC-PRIVATE PARTNERSHIP**

In concert with public emergency response efforts, the Industrial Emergency Council was formed in 1979, as a public-private partnership between industry and government agencies in San Mateo County aimed at reducing risk from the production, use and transportation of large quantities of hazardous materials through emergency preparedness and response. The Council has been implementing a two-phased hazardous material incident response system involving: (1) acquisition of an emergency-equipped hazardous material response van, and (2) development of a hazardous material emergency response training program for local industry and government employees.

**EVALUATION OF LOCAL PROGRAM**

The Federal Emergency Management Agency (FEMA) has published a monograph which formally acknowledges the "exemplary professionalism, enthusiasm, and results" demonstrated by San Mateo County's hazardous materials emergency response efforts. The leadership of the South County Fire Authority, the mutual aid agreements among and between State, County and local jurisdictions, and unprecedented voluntary cooperation and participation by the private hazardous material users were cited as the basis for this exemplary practice. The County's program was applauded for incorporating many elements of the federal government's integrated emergency management system, and a unique public-private partnership.



# **Policies**



## POLICIES

The policies are divided into two groups: (1) general policies and (2) program related policies. The general policies, much like goals, provide a foundation for the programs the County will pursue. The program related policies are more specific and identify actual measures to be undertaken.

### GENERAL POLICIES

San Mateo County will:

1. Protect Public Health and Safety

Protect public health and safety, and environmental quality from the adverse effects of hazardous waste.

2. Ensure Legal and Safe Management

Ensure that hazardous waste generated in the County is stored, handled, treated, transported, and disposed of in a legal and environmentally safe manner.

3. Maintain Viable Economic Climate

Maintain a viable economic climate for existing and future hazardous waste generating businesses in the County.

4. Assume Fair Share Responsibility

Assume a fair share of the responsibility for providing safe and effective hazardous waste treatment and transfer and storage facilities.

5. Promote Waste Reduction

Promote waste reduction, i.e., source reduction and on-site recycling, as the preferred method of hazardous waste management. After waste reduction, promote the following management techniques in order of preference: (1) off-site recycling, (2) on-site treatment, (3) off-site treatment, and (4) off-site disposal.

6. Strive for Maximum Feasible Waste Reduction

Strive for maximum feasible waste reduction. As a measurable objective, promote measures aimed at a 40% decrease in aggregate waste generation between 1986 and the year 2000.

7. Improve Small Quantity Generator Management Capability

Improve the hazardous waste management capability for small quantity generators, particularly small businesses and households.

8. Promote Maximum Cooperation

Promote maximum cooperation between government, industry and the public when making hazardous waste management decisions.

PROGRAM RELATED POLICIES

San Mateo County will:

9. Maintain and Share an Updated Data Base

Maintain an ongoing, and biennially updated, data base which quantifies the hazardous waste stream in the County and related need for hazardous waste management facilities. Rely principally on State data collection sources. Share San Mateo County data with other counties in the region and State to facilitate a comprehensive understanding of the distribution and movement of hazardous waste.

10. Accept Responsibility for Hazardous Waste Management

Accept responsibility for providing hazardous waste management capacity to the extent required by the definition of "fair share" in the Memorandum of Understanding between San Mateo County and the Association of Bay Area Governments (February, 1990) which establishes the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee (a.k.a. Facility Allocation Committee).

If additional waste management capacity is required, it shall be provided in accordance with the Capacity Allocation Plan approved by the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee, or any subsequent intercounty agreement based on the Capacity Allocation Plan. The Capacity Allocation Plan is a policy document which allocates hazardous waste management capacity responsibility among the Bay Area counties.

If the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee is ever dissolved, its process terminated, and resultant inter-jurisdictional agreements repealed, San Mateo County will reassess its responsibility for providing hazardous waste management capacity.

The capacity limitations of this policy do not apply to hazardous waste transfer and storage facilities.

This policy does not prevent any jurisdiction from approving an application for any type of hazardous waste management facility accepting any type of hazardous waste.

11. Require Conformance with Siting Criteria

Require that new or expanded off-site hazardous waste management facilities will only be approved when shown to be in conformance with the adopted siting criteria contained within this Plan.

12. Promote a Healthy Economic Climate

Promote a healthy economic climate by assuring that the County, and any city within the County, not deny a building or planning permit to a hazardous waste generating firm solely on the basis that the proposed operation will increase the County's obligation to provide hazardous waste treatment facilities.

13. Participate in Inter-County Dialogue

Participate with the Association of Bay Area Government (ABAG) in a process of inter-county dialogue toward siting hazardous waste management facilities which will: (1) not result in an undue burden on any one county, (2) involve balanced import and export of hazardous waste among the Bay Area counties, and (3) provide California with needed and technologically and environmentally sound hazardous waste treatment facilities.

14. Ensure Comprehensive Identification and Effective Enforcement

Ensure comprehensive identification of hazardous waste generating firms within the County, and effective enforcement of applicable hazardous waste regulations, through continued inspection and enforcement efforts.

15. Coordinate with Federal, State, and Local Regulatory Agencies

Coordinate with federal, state, and local regulatory agencies to assure that all firms which generate, treat, transport, store, or dispose of hazardous waste are operating in full compliance with the law.

16. Facilitate Comprehensive Identification of Hazardous Waste Generators

Facilitate comprehensive identification of hazardous waste generating firms through aggressive inventory efforts. Measures to identify existing firms not included in the County's generator inspection program shall include comprehensive examination of available business directories and focused street surveys. Measures to identify new firms established in the County shall include coordination with city business licensing functions.

17. Facilitate Waste Reduction

Facilitate this Plan's waste reduction objective through measures which: (1) formalize the County's commitment to waste reduction, (2) increase business and industry's awareness of the potential for waste reduction, (3) provide economic incentives for business and industry to pursue waste reduction, (4) provide technical assistance and information on funding sources to businesses contemplating waste reduction efforts, and (5) require waste reduction planning. Measures shall include, but not be limited to:

- a. Adopting a formal policy promoting waste reduction.
- b. Preparing and distributing informational pamphlets.
- c. Sponsoring waste reduction seminars and technology transfer workshops.
- d. Instituting a public recognition program.
- e. Coordinating the availability of funding for business to capitalize its waste reduction efforts.
- f. Providing cost incentives to business and industry for waste reduction efforts, whenever feasible.
- g. Obtaining and distributing waste reduction technical information and literature.
- h. Providing waste reduction referral assistance during regulatory inspections.
- i. Requiring firms generating large volumes of hazardous waste (more than 12 tons per year or as defined by the State regulations) to submit regularly updated waste reduction plans. This policy may be satisfied by submitting copies of federal or State required waste reduction plans.

18. Facilitate Expeditious and Streamlined Permitting of On-Site Facilities

Coordinate with the State Department of Health Services and other regulatory agencies to facilitate expeditious and streamlined permitting of hazardous waste management facilities, particularly on-site treatment facilities and off-site transfer and storage facilities.

19. Facilitate Improved Management Capability for Small Quantity Generators

Facilitate improved management capability for firms generating small quantities of hazardous waste through: (1) educational, informational, and technical assistance, and (2) efforts to increase convenience and reduce costs when managing hazardous waste. Measures shall include, but not be limited to:

- a. Preparing and distributing instructional hazardous waste management pamphlets.
- b. Sponsoring waste reduction seminars and technology transfer workshops designed for small quantity waste generators.
- c. Encouraging the establishment of a commercial hazardous waste transfer station.

20. Facilitate Improved Management Capability for Household Generators

Facilitate improved management capability for household generators of hazardous waste through educational and informational assistance, and

efforts to increase convenience and reduce costs when managing hazardous waste. Measures shall include, but not be limited to:

- a. Preparing and distributing household hazardous waste informational brochures.
- b. Establishing or encouraging the establishment of a semi-permanent household hazardous waste transfer station which operates on a regular basis, at a conveniently located site, and incorporates waste segregation and recycling measures.
- c. Striving to establish a permanent household hazardous waste transfer station and/or neighborhood or areawide collection program, which could include a curbside collection service.

21. Facilitate Clean up of Contaminated Sites

Facilitate timely and effective clean up of known contaminated hazardous waste sites in San Mateo County through coordination with the federal Environmental Protection Agency, State Department of Health Services, San Francisco Regional Water Quality Control Board, and affected private industry.

22. Inform the Public of Contaminated Sites

Inform the public of known contaminated hazardous waste sites in San Mateo County, including the extent of the contamination. Measures shall include required disclosure prior to time of development, consistent with local, State and federal legislation.

23. Monitor and Enforce Compliance with Hazardous Waste Transportation Laws

Monitor and enforce compliance with local, State and federal laws regulating the transportation of hazardous waste within the County.

24. Encourage Selection of Appropriate Transportation Routes

Consistent with existing law, encourage haulers of hazardous waste in San Mateo County to select transportation routes which: (1) minimize the time and distance that hazardous waste is in transit from point of generation to management facility, (2) avoid residential neighborhoods and environmentally sensitive habitats, (3) where feasible, avoid peak traffic hours and congested conditions, (4) minimize use of local roads, and (5) provide adequate emergency response services.

25. Provide Annual Training Seminars on Hazardous Waste Hauling Requirements

Provide and/or encourage annual training seminars to local police officers on hazardous waste hauling requirements, including placarding, shipping documentation, vehicle and container specifications, and roadside inspections.

26. Ensure Coordinated and Effective Emergency Response

Ensure coordinated and timely emergency response in the event of an accidental discharge or spill of hazardous materials through effective preparedness planning.

27. Support Industrial Emergency Council

Support the Industrial Emergency Council to continue its existing efforts toward risk reduction, and improved emergency preparedness and response in the event of an accidental discharge or spill of hazardous materials.

28. Incorporate Provisions of Hazardous Waste Management Plan into Local Land Use Regulations

As required by State law, incorporate the provisions of the Hazardous Waste Management Plan, including siting criteria, into the land use regulations of the County and each city within the County. This may be accomplished by one of the three following methods:

- a. Adopt a city hazardous waste management plan containing all elements required of County plans, including siting criteria and designation of general areas where the criteria may be applicable, which is consistent with the approved County Hazardous Waste Management Plan.
- b. Incorporate the applicable portions of the County Hazardous Waste Management Plan, by reference, into the County or City General Plan.
- c. Enact an ordinance which requires that all applicable zoning, subdivision, conditional use permit, and variance decisions are consistent with the portions of the approved County Hazardous Waste Management Plan which identify general areas or siting criteria for hazardous waste management facilities.

29. Designate a Countywide Body to Implement the County Hazardous Waste Management Plan

Designate an existing Countywide body to assume financial and administrative responsibility for implementation of the County Hazardous Waste Management Plan.

30. Annually Review and Evaluate the Success of the County Hazardous Waste Management Plan

Annually review and evaluate the success of the County Hazardous Waste Management Plan in implementing its stated policies and achieving identified goals and objectives.

# **Implementation**



## IMPLEMENTATION

The policies established by this plan describe a set of tasks or measures to achieve stated goals. The final step in this planning process is policy implementation. The Implementation Chapter describes specific activities and accomplishments associated with each policy, as well as establishes schedules, identifies responsible participants, and develops a process to allocate necessary resources.

### GENERAL POLICIES

Each general policy and the associated program related policies which implement it are listed below:

1. Protect Public Health and Safety

Protect public health and safety, and environmental quality from the adverse effects of hazardous waste.

Program Related Policies: 10-11, 13-29

2. Ensure Legal and Safe Management

Ensure that hazardous waste generated in the County is stored, handled, treated, transported, and disposed of in a legal and environmentally safe manner.

Program Related Policies: 14-16, 19-29

3. Maintain Viable Economic Climate

Maintain a viable economic climate for existing and future hazardous waste generating businesses in the County.

Program Related Policies: 10, 12

4. Assume Fair Share Responsibility

Assume a fair share of the responsibility for providing safe and effective hazardous waste treatment and transfer and storage facilities.

Program Related Policies: 10, 12-13

5. Promote Waste Reduction

Promote waste reduction, i.e., source reduction and on-site recycling, as the preferred method of hazardous waste management. After waste reduction, promote the following management techniques in order of preference: (1) off-site recycling, (2) on-site treatment, (3) off-site treatment, and (4) off-site disposal.

Program Related Policies: 17, 19-20

6. Strive for Maximum Feasible Waste Reduction

Strive for maximum feasible waste reduction. As a measurable objective, promote measures aimed at a 40% decrease in aggregate waste generation between 1986 and the year 2000.

Program Related Policies: 17, 19-20

7. Improve Small Quantity Generator Management Capability

Improve the hazardous waste management capability for small quantity generators, particularly small businesses and households.

Program Related Policies: 19-20

8. Promote Maximum Cooperation

Promote maximum cooperation between government, industry and the public when making hazardous waste management decisions.

Program Related Policies: 9, 13, 15, 27

## PROGRAM RELATED POLICIES

For each program related policy, specific implementation techniques and activities are discussed below:

### 9. Maintain and Share an Updated Data Base

Maintain an ongoing, and biennially updated, data base which quantifies the hazardous waste stream in the County and related need for hazardous waste management facilities. Rely principally on State data collection sources. Share San Mateo County data with other counties in the region and State to facilitate a comprehensive understanding of the distribution and movement of hazardous waste.

#### **Implementing Responsibility:**

Cities within the County  
County of San Mateo

#### **Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

#### **Tasks:**

- Collect and analyze data from State Department of Health Services manifest reports and facility annual reports, ABAG and other county plans, and local information sources (MOU generator identification program and business plan data).
- Survey key waste generating firms, and existing treatment and storage facilities.
- Tabulate data using established format.
- Distribute local data to ABAG and other bay area county staff.

#### **Schedule:**

Ongoing.  
Prepare first report using 1990 data by December, 1991.

#### **Estimated Cost:**

Moderate; approximately \$20,000/year (one employee, working 1/3 time).

## 10. Accept Responsibility for Hazardous Waste Management

Accept responsibility for providing hazardous waste management capacity to the extent required by the definition of "fair share" in the Memorandum of Understanding between San Mateo County and the Association of Bay Area Governments (February, 1990) which establishes the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee (a.k.a. Facility Allocation Committee).

If additional waste management capacity is required, it shall be provided in accordance with the Capacity Allocation Plan approved by the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee, or any subsequent intercounty agreement based on the Capacity Allocation Plan. The Capacity Allocation Plan is a policy document which allocates hazardous waste management capacity responsibility among the Bay Area counties.

If the San Francisco Bay Area Hazardous Waste Management Capacity Allocation Committee is ever dissolved, its process terminated, and resultant inter-jurisdictional agreements repealed, San Mateo County will reassess its responsibility for providing hazardous waste management capacity.

The capacity limitations of this policy do not apply to hazardous waste transfer and storage facilities.

This policy does not prevent any jurisdiction from approving an application for any type of hazardous waste management facility accepting any type of hazardous waste.

### **Implementing Responsibility:**

Cities within the County  
County of San Mateo

### **Probable Implementing Agency:**

Cities within the County  
County of San Mateo  
San Mateo County Department of Health, Environmental Health Section

### **Tasks:**

- Incorporate policy language into city and county general plans.  
(Cities and the County)
- Distribute County Hazardous Waste Management Plan to relevant waste management firms or organizations. (Health Department)

### **Schedule:**

Amend general plans by December, 1991.  
Distribute plan on ongoing basis.

### **Estimated Cost:**

Low; approximately \$2,000 per jurisdiction.

11. Require Conformance with Siting Criteria

Require that new or expanded off-site hazardous waste management facilities will only be approved when shown to be in conformance with the adopted siting criteria contained within this plan.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

Cities within the County  
County of San Mateo

**Task:**

- Incorporate policy requirement into city and county general plans and related land use regulations.

**Schedule:**

Amend general plans and related land use regulations by December, 1991.

**Estimated Cost:**

(See Policy 10)

## 12. Promote a Healthy Economic Climate

Promote a healthy economic climate by assuring that the County, and any city within the County, not deny a building or planning permit to a hazardous waste generating firm solely on the basis that the proposed operation will increase the County's obligation to provide hazardous waste treatment facilities.

### **Implementing Responsibility:**

Cities within the County  
County of San Mateo

### **Probable Implementing Agency:**

Cities within the County  
County of San Mateo  
San Mateo County Department of Environmental Management, Planning  
Division

### **Tasks:**

- Prepare a memorandum of understanding which reflects the policy requirement.
- Circulate the memorandum of understanding for each city and the county to sign.

### **Schedule:**

Prepare memorandum by December, 1991, and circulate to all jurisdictions by June, 1992.

### **Estimated Cost:**

Low; approximately \$1,000.

13. Participate in Inter-County Dialogue

Participate with the Association of Bay Area Government (ABAG) in a process of inter-county dialogue toward siting hazardous waste management facilities which will: (1) not result in an undue burden on any one county, (2) involve balanced import and export of hazardous waste among the Bay Area counties, and (3) provide California with needed and technologically and environmentally sound hazardous waste treatment facilities.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Health Department, Environmental Health Section

**Tasks:**

- Attend all ABAG sponsored meetings related to facility siting decisions within the region.
- At such meetings, represent a position which reflects the objectives established in this policy.

**Schedule:**

Ongoing.

**Estimated Cost:**

Low; approximately \$2,000/year.

14. Ensure Comprehensive Identification and Effective Enforcement

Ensure comprehensive identification of hazardous waste generating firms within the County, and effective enforcement of applicable hazardous waste regulations, through continued inspection and enforcement efforts.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County District Attorney's Office

**Tasks:**

- Continue existing efforts to identify and regularly inspect hazardous waste generating firms, in accordance with the Memorandum of Understanding (MOU) between the State Department of Health Services and San Mateo County, and other relevant legal authority.
- Distribute informational brochures and attempt to determine how the County may better assist each firm in solving its individual hazardous waste management needs.
- Continue, and improve upon, existing efforts to investigate violations of hazardous waste laws in cooperation with federal, state, and county regulatory agencies, and prosecute criminal and civil enforcement actions. Prosecution could result in criminal sanctions, and/or civil penalties and clean-up orders.

**Schedule:**

Ongoing.

**Estimated Cost:**

No additional monies (Health Department).  
High; approximately \$125,000/year (District Attorney's Office).  
(A significant portion of this cost may be offset by fines and penalties.)

15. Coordinate with Federal, State, and Local Regulatory Agencies

Coordinate with federal, state, and local regulatory agencies to assure that all firms which generate, treat, transport, store, or dispose of hazardous waste are operating in full compliance with the law.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County District Attorney's Office

**Tasks:**

- Continue to provide existing levels of cooperation, communication, and assistance to the Federal Environmental Protection Agency (EPA), State Department of Health Services (DHS), Bay Area Regional Water Quality Control Board (RWQCB), Bay Area Air Quality Management District (BAAQMD), and local police and fire personnel on matters of hazardous waste law enforcement.
- Continue, and improve upon, existing efforts to investigate violations of hazardous waste laws in cooperation with federal, state, and county regulatory agencies, and prosecute criminal and civil enforcement actions. Prosecution could result in criminal sanctions, and/or civil penalties and clean-up orders.

**Schedule:**

Ongoing.

**Estimated Cost:**

(See Policy 14)

## 16. Facilitate Comprehensive Identification of Hazardous Waste Generators

Facilitate comprehensive identification of hazardous waste generating firms through aggressive inventory efforts. Measures to identify existing firms not included in the County's generator inspection program shall include comprehensive examination of available business directories and focused street surveys. Measures to identify new firms established in the County shall include coordination with city business licensing functions.

### **Implementing Responsibility:**

Cities within the County  
County of San Mateo

### **Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

### **Tasks:**

- Comprehensively review all available business identification directories, including chamber of commerce listings, business contact guides, telephone directories, and zoning and building permit files to identify probable existing hazardous waste generators.
- Conduct street by street surveys in all known industrial areas and relevant commercial areas to identify probable existing hazardous waste generators.
- Initiate a process which confirms that identified firms are hazardous waste generators.
- Develop a standardized question to be included in business license applications which would identify new hazardous waste generators.
- Request each city to amend business license applications to include the generator identification question.
- When inspecting newly identified firms, distribute informational brochures and attempt to determine how the County may better assist each firm in solving its individual hazardous waste management needs.

### **Schedule:**

Aggressive inventory efforts: January, 1992 to January, 1994.  
Business license efforts: January, 1992 to December, 1992.

### **Estimated Cost:**

Moderate; approximately \$60,000 (\$30,000/year for two years). (A portion of this cost may be offset by hazardous materials management fees.)

17. Facilitate Waste Reduction

Facilitate this plan's waste reduction objective through measures which: (1) formalize the County's commitment to waste reduction, (2) increase business and industry's awareness of the potential for waste reduction, (3) provide economic incentives for business and industry to pursue waste reduction, (4) provide technical assistance and information on funding sources to businesses contemplating waste reduction efforts, and (5) require waste reduction planning. Measures shall include, but not be limited to:

a. Adopting a formal policy promoting waste reduction.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

Cities within the County  
County of San Mateo  
San Mateo County Department of Environmental Management, Planning  
Division

**Tasks:**

- Prepare a resolution which commits each jurisdiction to promoting waste reduction. The resolution shall include language which requires the jurisdiction to consider a firm's waste reduction efforts before entering into a business arrangement with that firm.
- Circulate the resolution for each city and the County to adopt.

**Schedule:**

Prepare resolution by December, 1991; adopt resolution by June, 1992.

**Estimated Cost:**

Low; approximately \$1,000.

17.b. Preparing and distributing informational pamphlets.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Prepare a simple, yet comprehensive, informational brochure aimed at hazardous waste generating firms which includes a section that emphasizes: (1) what waste reduction is, (2) what benefits may be achieved from it, and (3) what resources are available to assist businesses considering waste reduction, including a contact guide, with telephone numbers for consultants and library assistance. Utilize existing available brochures to the greatest extent feasible.
- Distribute the brochure to all identified waste generators in the County as well as business and trade associations.
- Encourage the State Department of Health Services to distribute the brochure on a state-wide basis.

**Schedule:**

Prepare brochure by December, 1991, and distribute on an ongoing basis thereafter.

**Estimated Cost:**

Low; approximately \$10,000.

17.c. Sponsoring waste reduction seminars and technology transfer workshops.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Sponsor at least one waste reduction seminar/workshop per year to provide general level guidance to businesses contemplating a waste reduction program. Emphasize common waste reduction techniques, economic benefits, and available funding. Segments will be devoted to specific industrial operations common in San Mateo County, e.g., electronic assembly, chemical manufacturing, and metal fabrication.
- Arrange field visits to companies where waste reduction efforts have been successfully implemented.
- Provide the meeting place, develop the meeting agenda, solicit or hire guest speakers, and prepare meeting notice.
- Distribute meeting notice to all known hazardous waste generating firms in San Mateo County.

**Schedule:**

Hold first seminar/workshop by June, 1992, and annually thereafter.

**Estimated Cost:**

Low; approximately \$2,000/year.

17.d. Instituting a public recognition program.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Prepare a waste reduction hall of fame plaque and purchase trophies.
- Host at least one awards dinner per year and present a trophy to the firm with the most successful annual waste reduction record.
- Develop a selection criteria for the award.
- Invite representatives from business, civic, and public service organizations.
- Assure full media coverage.
- Exhibit hall of fame plaque in a prominent location.

**Schedule:**

First awards dinner to be held by June, 1992, and annually thereafter.

**Estimated Cost:**

Low; approximately \$3,000/year.

ordinating the availability of funding for business to capitalize its waste reduction efforts.

**Implementing Responsibility:**

ities within the County  
ounty of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section

**Tasks:**

In the brochure described in Policy 18.b, include a section that identifies all loan and grant programs, as well as financing arrangements available to businesses under current State and federal law. Emphasis will be placed on loan guarantee programs, interest subsidies, and tax credits and deductions.

When requested, serve as a liaison between businesses requiring capital for a waste reduction program and institutions providing funding.

**Schedule:**

Brochure (see Policy 17.b).  
Liaison - Ongoing.

**Estimated Cost:**

Brochure (see Policy 17.b).  
Liaison - No additional monies.

- 17.f. Providing cost incentives to business and industry for waste reduction efforts, whenever feasible.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- During regulatory inspections, survey firms to determine what additional assistance or incentives from local government could help them reduce their waste generation.
- Develop additional assistance and incentive programs, as feasible.
- Continue to charge fees based on the amount of hazardous waste generated.

**Schedule:**

Prepare and begin distributing survey by September, 1991.

**Estimated Cost:**

Prepare and distribute survey - Low; approximately \$1,000.  
Develop additional assistance and incentive programs - Unknown.

- 17.g. Obtaining and distributing waste reduction technical information and literature.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Obtain literature which emphasizes the relevant technical information necessary to initiate a waste reduction program, as well as financing opportunities, hazardous waste management regulations, and available consultants.
- Maintain a set of resources at the County Office Building in Redwood City.
- Distribute additional sets of resources to the College of San Mateo Library in San Mateo, and the city library in South San Francisco.

**Schedule:**

Secure and distribute literature by June, 1992.

**Estimated Cost:**

Books and materials - Moderate; approximately \$35,000.  
Staff (See Policy 29)

- 17.h. Providing waste reduction referral assistance during regulatory inspections.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Task:**

- During regulatory inspections, distribute waste reduction informational pamphlets and provide referral assistance regarding what resources are available to institute a waste reduction program.

**Schedule:**

Begin referral assistance by September, 1991.

**Estimated Cost:**

No additional monies.

- 17.i. Requiring firms generating large volumes of hazardous waste (more than 12 tons per year or as defined by the State regulations) to submit regularly updated waste reduction plans. This policy may be satisfied by submitting copies of federal or State required waste reduction plans.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Identify firms generating large volumes of hazardous waste. Use the most current data available.
- Request copies of relevant waste reduction (or waste minimization) plans.
- Maintain plans on file.

**Schedule:**

Identify firms by June, 1991.  
Request plans by December, 1991.

**Estimated Cost:**

(See Policy 29)

18. Facilitate Expeditious and Streamlined Permitting of Hazardous Waste Management Facilities

Coordinate with the State Department of Health Services and other regulatory agencies to facilitate expeditious and streamlined permitting of hazardous waste management facilities, particularly on-site treatment facilities and off-site transfer and storage facilities.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Interview representatives from select San Mateo County firms which either have secured a permit to operate hazardous waste management facility (or are currently in the process of doing so) to determine where improvements in the State permitting process should occur.
- Prepare and send a letter to the State Department of Health Services with recommendations.

**Schedule:**

Interview firms by December, 1991, send letter by June, 1992.

**Estimated Cost:**

Low; approximately \$2,000.

19. Facilitate Improved Management Capability for Small Quantity Generators

Facilitate improved management capability for firms generating small quantities of hazardous waste through: (1) educational, informational, and technical assistance, and (2) efforts to increase convenience and reduce costs when managing hazardous waste. Measures shall include, but not be limited to:

- a. Preparing and distributing instructional hazardous waste management pamphlets.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section

**Task:**

- In the brochure described in Policy 17.b, include a section aimed at small quantity generators. The section will emphasize applicable hazardous waste management laws and provide guidance on record keeping, filling out manifests, as well as discuss treatment, storage, and disposal options.

**Schedule:**

(See Policy 17.b)

**Estimated Cost:**

(See Policy 17.b)

19.b. Sponsoring waste reduction seminars and technology transfer workshops designed for small quantity waste generators.

(See Policy 17.c).

- 19.c. Encouraging the establishment of a commercial hazardous waste transfer station.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County Department of Environmental Management, Planning  
Division  
City and County Planning Departments

**Tasks:**

- Consider expanding the household hazardous waste transfer station described in Policy 21.c to also serve business and industry (Health Department).
- Should a private firm pursue development of commercial transfer and storage facility, provide maximum assistance, and to the extent feasible, expedite the local permit review process and consider a reduction in permit processing fees (Planning Departments).

**Schedule:**

Ongoing.

**Estimated Cost:**

Expansion - Unknown (Health Department).  
Reduce Permit Fees - Low; approximately \$1,000 (Planning Departments).

20. Facilitate Improved Management Capability for Household Generators

Facilitate improved management capability for household generators of hazardous waste through educational and informational assistance, and efforts to increase convenience and reduce costs when managing hazardous waste. Measures shall include, but not be limited to:

- a. Preparing and distributing household hazardous waste informational brochures.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Prepare a simple, yet comprehensive, informational brochure aimed at households. The brochure will emphasize: (1) how to identify household hazardous waste, (2) how and where to properly store, transport and dispose of household hazardous waste, (3) what non-hazardous alternatives may be substituted for conventional household products.
- Distribute the brochure to all households in the County. To the extent feasible, incorporate the brochure into existing utility bill mailings.

**Schedule:**

Prepare brochure by December, 1991, and distribute on an ongoing basis thereafter.

**Estimated Cost:**

Low; approximately \$10,000.

- 20.b. Establishing or encouraging the establishment of a semi-permanent household hazardous waste transfer station which operates on a regular basis, at a conveniently located site, and incorporates waste segregation and recycling measures.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County Department of Environmental Management, Planning  
Division  
City and County Planning Departments

**Tasks:**

- Continue existing efforts to establish a transfer and storage facility which operates at least ten days per year (Health Department).
- Should a private firm pursue development of transfer and storage facility, provide maximum assistance, and to the extent feasible, expedite the local permit review process and consider a reduction in permit processing fees (Planning Departments).

**Schedule:**

Establish semi-permanent transfer and storage facility by June, 1991.

**Estimated Cost:**

Transfer Station - Moderate; approximately \$90,000/year (Health Department).  
Reduce Permit Fees (see Policy 19.c).

- 20.c. Striving to establish a permanent household hazardous waste transfer station and/or neighborhood or areawide collection program, which could include a curbside collection service.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section

**Tasks:**

- Monitor the demand and cost effectiveness of the proposed semi-permanent household hazardous waste transfer station, and determine whether a need exists for a permanent facility.
- Evaluate the feasibility of a neighborhood or areawide household hazardous waste collection program, which could include a curbside collection service. Prepare a report which summarizes the conclusions of this evaluation.

**Schedule:**

Prepare feasibility report by June, 1992.

Determine need for permanent facility by June, 1993.

**Estimated Cost:**

(See Policy 29)

21. Facilitate Clean up of Contaminated Sites

Facilitate timely and effective clean up of known contaminated hazardous waste sites in San Mateo County through coordination with the federal Environmental Protection Agency, State Department of Health Services, San Francisco Regional Water Quality Control Board, and affected private industry.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County District Attorney's Office

**Tasks:**

- Continue to provide existing levels of staff assistance to the referenced agencies when remediating contaminated sites. Specific tasks may include identifying sources of contamination, proposing remediation methods for contaminated soils and groundwater, review and critique of remediation plans, and providing technical input.
- Continue to provide existing levels of technical assistance to property owners with contaminated sites.
- Continue, and improve upon, existing efforts to investigate violations of hazardous waste laws in cooperation with federal, state, and county regulatory agencies, and prosecute criminal and civil enforcement actions. Prosecution could result in criminal sanctions, and/or civil penalties and clean-up orders.

**Schedule:**

Ongoing.

**Estimated Cost:**

(See Policy 14)

## 22. Inform the Public of Contaminated Sites

Inform the public of known contaminated hazardous waste sites in San Mateo County, including the extent of the contamination. Measures shall include required disclosure prior to time of development, consistent with local, State and federal legislation.

### **Implementing Responsibility:**

Cities within the County  
County of San Mateo

### **Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Health Department, Environmental Health Section  
City Planning Departments

### **Tasks:**

- Prepare a list of known contaminated sites within the relevant jurisdiction. Include in the list all sites identified by the Governor's Office of Planning and Research, pursuant to AB 4350 (1986).
- Determine the extent of contamination at known sites, and include this information, as available, on the list.
- Make the list available to the public through preparing a display or informational brochure.
- Establish a procedure whereby an applicant seeking development approval from the jurisdiction must consult the list and disclose in writing whether the proposed development is located on a contaminated site.

### **Schedule:**

Prepare a list and establish procedure immediately, as required by AB 4350.

### **Estimated Cost:**

No additional monies.

23. Monitor and Enforce Compliance with Hazardous Waste Transportation Laws

Monitor and enforce compliance with local, State and federal laws regulating the transportation of hazardous waste within the County.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
City Police Departments  
County Sheriff's Department  
San Mateo County District Attorney's Office

**Tasks:**

- Continue to stop vehicles suspected of transporting hazardous waste illegally, and inspect records (Health and Police Departments).
- As authorized by law, coordinate with California Highway Patrol to enforce hazardous waste transportation regulations. Tasks may include vehicle inspection for proper placarding, shipping documentation, and haulers license.
- Continue, and improve upon, existing efforts to investigate violations of hazardous waste laws in cooperation with federal, state, and county regulatory agencies, and prosecute criminal and civil enforcement actions. Prosecution could result in criminal sanctions, and/or civil penalties and clean-up orders.

**Schedule:**

Ongoing.

**Estimated Cost:**

(See Policy 14)

24. Encourage Selection of Appropriate Transportation Routes

Consistent with existing law, encourage haulers of hazardous waste in San Mateo County to select transportation routes which: (1) minimize the time and distance that hazardous waste is in transit from point of generation to management facility, (2) avoid residential neighborhoods and environmentally sensitive habitats, (3) where feasible, avoid peak traffic hours and congested conditions, (4) minimize use of local roads, and (5) provide adequate emergency response services.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Environmental Management, Planning  
Division  
San Mateo County Department of Health, Environmental Health Section  
San Mateo County Department of Public Works  
San Mateo County Emergency Services Council

**Task:**

- Request that the State Department of Health Services apply the criteria included in the policy as a condition of approval when issuing hauler's permits to firms transporting hazardous waste in San Mateo County.

**Schedule:**

Prepare a list of hauling firms by June, 1991 (Health Department).  
Coordinate with State Department of Health Services by December, 1991.

**Estimated Cost:**

(See Policy 29)

25. Provide Annual Training Seminars on Hazardous Waste Hauling Requirements

Provide and/or encourage annual training seminars to local police officers on hazardous waste hauling requirements, including placarding, shipping documentation, vehicle and container specifications, and roadside inspections.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County District Attorney's Office

**Tasks:**

- Conduct a half-day seminar which discusses federal and state hazardous waste hauling requirements.
- Invite police officers from each jurisdiction in the County to attend the seminar.
- Alternatively, request the California Highway Patrol or another police agency to sponsor the seminar.

**Schedule:**

Conduct first seminar by June, 1992, and annually thereafter.

**Estimated Cost:**

Low; approximately \$2,000/year.

26. Ensure Coordinated and Effective Emergency Response

Ensure coordinated and timely emergency response in the event of an accidental discharge or spill of hazardous materials through effective preparedness planning.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Area Emergency Services Council

**Task:**

- Continue existing emergency response and preparedness planning efforts.

**Schedule:**

Ongoing.

**Estimated Cost:**

No additional monies.

27. Support Industrial Emergency Council

Support the Industrial Emergency Council to continue its existing efforts toward risk reduction, and improved emergency preparedness and response in the event of an accidental discharge or spill of hazardous materials.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Department of Health, Environmental Health Section  
San Mateo County Area Emergency Services Council

**Tasks:**

- Continue to attend each Industrial Emergency Council meeting.
- Consider funding Industrial Emergency Council activities.

**Schedule:**

Ongoing.

**Estimated Cost:**

Meeting attendance - no additional monies.  
Funding - Unknown.

28. Incorporate Provisions of Hazardous Waste Management Plan into Local Land Use Regulations

As required by State law, incorporate the provisions of the Hazardous Waste Management Plan, including siting criteria, into the land use regulations of the County and each city within the County. This may be accomplished by one of the three following methods:

- a. Adopt a city hazardous waste management plan containing all elements required of County plans, including siting criteria and designation of general areas where the criteria may be applicable, which is consistent with the approved County Hazardous Waste Management Plan.
- b. Incorporate the applicable portions of the County Hazardous Waste Management Plan, by reference, into the County or City General Plan.
- c. Enact an ordinance which requires that all applicable zoning, subdivision, conditional use permit, and variance decisions are consistent with the portions of the approved County Hazardous Waste Management Plan which identify general areas or siting criteria for hazardous waste management facilities.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

Cities within the County  
County of San Mateo  
San Mateo County Department of Environmental Management, Planning  
Division

**Tasks:**

- Develop model ordinance as a guide for jurisdictions.
- Incorporate relevant provisions of the plan into city and county land use regulations.

**Schedule:**

Develop model ordinance and amend general plans and/or zoning ordinances within 180 days of the plan's final approval by the State Department of Health Services.

**Estimated Cost:**

(See Policy 10)

29. Designate a Countywide Body to Implement the County Hazardous Waste Management Plan

Designate an existing Countywide body to assume financial and administrative responsibility for implementation of the County Hazardous Waste Management Plan.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Health Department, Environmental Health Section

**Tasks:**

- Develop a process to assure continuous funding.
- Manage plan implementation by coordinating with the implementing agency associated with each policy. Place emphasis on monitoring funding needs and assuring that tasks are completed as scheduled.

**Schedule:**

Develop funding process by December, 1991.  
Manage plan implementation: Ongoing.

**Estimated Cost:**

Develop process: No additional monies.  
Manage plan: Moderate; approximately \$70,000/year.

30. Annually Review and Evaluate the Success of the County Hazardous Waste Management Plan

Annually review and evaluate the success of the County Hazardous Waste Management Plan in implementing its stated policies and achieving identified goals and objectives.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Health Department, Environmental Health Section

**Task:**

- Prepare an annual report which evaluates the success of the plan implementation process and achievement of identified goals and objectives.

**Schedule:**

Prepare first report by December, 1992, and annually thereafter.

**Estimated Cost:**

(See Policy 29)

31. Annually Review and Evaluate the Success of the County Hazardous Waste Management Plan

Annually review and evaluate the success of the County Hazardous Waste Management Plan in implementing its stated policies and achieving identified goals and objectives.

**Implementing Responsibility:**

Cities within the County  
County of San Mateo

**Probable Implementing Agency:**

San Mateo County Health Department, Environmental Health Section

**Task:**

Prepare an annual report which evaluates the success of the plan implementation process and achievement of identified goals and objectives.

**Schedule:**

Prepare first report by December, 1990, and annually thereafter.

**Estimated Cost:**

(See Policy 30)

## FUNDING ALLOCATION FORMULA

The estimated aggregate cost for the programs prescribed by the plan range between approximately \$314,000 to \$405,000 per year. These costs are intended to be incurred as follows:

- a. Half of the costs (\$157,000 to \$202,500 per year) will be assumed by the Solid Waste Fund, administered by the Board of Supervisors through the County Department of Public Works.
- b. Half of the cost (\$157,000 to \$202,500 per year) will be assumed by the cities within the County and the County according to a funding allocation formula which determines the proportionate contribution ratio for each jurisdiction.

The funding allocation formula is based on relative population, hazardous waste generation (number of firms and tonnage), and existing treatment capacity per jurisdiction, as shown in Tables 16-1 and 16-2. Data was derived from State Department of Finance population statistics (January, 1988), State Department of Health Services Manifest Data (1987), and County Department of Health Generator Identification Program Data (August, 1988).

Aggressive efforts will be undertaken to reduce local government's cost contribution through: (1) pursuit of available grant monies, and (2) fines and penalties derived from hazardous waste law violations.

TABLE 16-1

HAZARDOUS WASTE MANAGEMENT PLAN  
FUNDING ALLOCATION FORMULA

JURISDICTION	POPULATION (WEIGHT=2) (%)	NUMBER OF FIRMS GENERATING HAZARDOUS WASTE (WEIGHT=1) (%)	TONNAGE GENERATED (WEIGHT=1) (%)	WEIGHTED AVERAGE (%)	EXISTING FACILITY CAPACITY (%)	CORRECTION FOR EXISTING CAPACITY CITY/COUNTY CONTRIBUTION RATIO (%)
Atherton	1.3	0	0	0.7	0	0.7
Belmont	3.8	4.8	0.6	3.2	0	3.7
Brisbane	0.5	1.2	0.9	0.8	0	0.9
Burlingame	4.3	6.6	1.0	4.0	0	4.6
Colma	0.1	0.8	0.04	0.3	0	0.3
Daly City	13.5	6.3	3.2	9.1	0	10.3
East Palo Alto	3.0	1.2	38.3	11.4	100	0
Foster City	4.6	1.2	0.1	2.6	0	3.0
Half Moon Bay	1.3	0.9	0.003	0.9	0	1.0
Hillsborough	1.8	0	0	0.9	0	1.0
Menlo Park	4.4	6.7	6.3	5.4	0	6.1
Millbrae	3.3	1.8	0.06	2.1	0	2.4
Pacifica	5.9	1.3	0.3	3.3	0	3.8
Portola Valley	0.7	0	0	0.4	0	0.4
Redwood City	9.6	12.6	17.4	12.3	0	13.9
San Bruno	5.7	7.6	1.1	5.0	0	5.7
San Carlos	4.3	7.0	6.8	5.6	0	6.3
San Mateo	13.4	15.2	0.7	10.7	0	12.0
South San Francisco	8.3	13.9	7.6	9.5	0	10.8
Woodside	0.9	0	0	0.5	0	0.5
County	9.3	10.9	15.7	11.3	0	12.7
	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 16-2

CITY/COUNTY CONTRIBUTION BASED UPON FUNDING ALLOCATION FORMULA<sup>1</sup>

JURISDICTION	FIRST YEAR (\$)	SECOND YEAR (\$)	THIRD AND EACH FOLLOWING YEAR (\$)
Atherton	\$ 1,485	\$ 1,261	\$ 1,151
Belmont	7,408	6,292	5,743
Brisbane	1,777	1,510	1,378
Burlingame	9,248	7,855	7,170
Colma	594	504	460
Daly City	20,858	17,716	16,171
East Palo Alto	0	0	0
Foster City	6,016	5,110	4,664
Half Moon Bay	2,001	1,700	1,551
Hillsborough	2,056	1,746	1,594
Menlo Park	12,440	10,567	9,645
Millbrae	4,833	4,105	3,747
Pacifica	7,628	6,479	5,914
Portola Valley	800	679	620
Redwood City	28,093	23,862	21,781
San Bruno	11,488	9,758	8,907
San Carlos	12,784	10,858	9,911
San Mateo	24,372	20,701	18,895
South San Francisco	21,777	18,497	16,884
Woodside	1,028	873	797
County	<u>25,814</u>	<u>21,927</u>	<u>20,017</u>
	<b>\$202,500</b>	<b>\$172,000</b>	<b>\$157,000</b>

<sup>1</sup>Figures indicate maximum contribution. Amounts may be reduced from grant funding sources or enforcement cost recovery.

## **SUPPLEMENTAL FUNDING SOURCES**

Supplemental funding sources could come from federal or State grants, regulatory fees, or cost recovery from enforcement activities.

### **GRANTS**

#### **1. State Grants**

When available, grants may be most useful for the initial development of proposed hazardous waste management programs. There are several State Assembly bills which authorize funding for such local government programs. These include:

##### **a. AB 2448 (Eastin)**

AB 2448 increases solid waste disposal fees to generate \$20 million each year for remedial activities at solid waste landfills. However, up to 20 percent of the money collected each year may be used to support local hazardous waste programs such as waste reduction and household hazardous waste collection programs.

##### **b. AB 1387 (Farr)**

This pending legislation would expand an existing State Department of Health Services (DHS) program to assist counties with startup and initial operation of hazardous waste management programs. Grants of up to \$100,000 would be provided to counties for waste reduction, education, and technical assistance programs.

#### **2. Federal Grants**

The Hazardous Waste Reduction Act (HR 2800) failed to be voted into law during the 1988 Congressional session. This Act would have allocated \$10 million a year in matching grants to states for research and technical/financial activities and \$8 million a year to establish a national waste reduction clearinghouse. If reintroduced, this legislation would not only supplement the State funds available to counties, but also create an informational resource.

### **FEES**

The County currently accepts fees from firms which generate, treat, or store hazardous waste. In addition to the County's current fee structure, the County may collect additional fees and taxes allowed under recent State legislation.

#### **1. County's Current Fee Structure**

Since August 1983, the County Health Department has assumed primary inspection and enforcement authority for hazardous waste generating firms. Each waste generating business is inspected annually and assessed a fee, which is based on the amount and type of waste generated. Annual fees

range from \$80 for firms that only generate and recycle waste oil or solvents to \$9,666 for firms that generate more than 2,500 tons of hazardous waste per year. The generator fees subsidize the County's inspection program. Currently, there is not a surplus of money left over from these fees to fund other hazardous waste related programs, such as the plan's programs. In addition to County fees, the State exacts a fee for firms generating more than 5 tons of waste (not including waste oil and solvents being recycled). State generator fees range between \$1,100 and \$22,000 per year (1988).

Local generator fees could be increased to provide a supplemental source of income to implement the plan. However, such an approach would severely constrain smaller businesses (which comprise the majority of the County's generators) since small firms: (1) are least able to absorb added fees, and (2) usually cannot deduct such fees from corresponding State fees.

State Health and Safety Code Section 510 authorizes a local agency to adopt an ordinance or resolution prescribing additional fees which may be necessary to recover the costs of the health officer enforcing a public health statute.

## 2. New Fees Allowed by State Legislation

Recent legislation in California has focused on requiring that hazardous waste generators pay for programs, such as waste reduction, that are targeted toward them.

### a. AB 2490 (Killea)

This legislation requires counties to meet with representatives of local businesses, if requested, to determine whether there is a need for a hazardous materials information and consultation service, and to establish such a service, if needed. Counties are authorized to collect fees from businesses which benefit from the services provided by this bill. These fees are to be used to offset the expenses incurred by the County when meeting with the requesting firms, and to establish a hazardous materials information and consulting service program.

### b. AB 534 (Peace)

AB 534 authorizes local governments to impose a 10 percent gross receipts tax on new and existing off-site hazardous waste treatment facilities. Receipts derived from recycling hazardous waste or treatment of infectious wastes are exempt from this tax. Revenues may be used to fund activities related to the facility's operation and to support specified emergency response service.

### c. AB 2448 (Eastin)

This legislation authorizes counties to collect fees from solid waste landfill operators to pay for programs which ensure that hazardous waste is not improperly disposed of in the landfill.

### 3. Enforcement Cost Recovery

State law provides for civil penalties of up to \$25,000 per hazardous waste violation and criminal fines up to \$100,000 for each day of violation. Between 50-100% of the fine or civil penalty is payable to local agencies to offset their enforcement costs. To date, the District Attorney's Office has obtained \$141,000 in civil penalties, of which \$136,000 has been retained to defray costs. The District Attorney's Office informs that when considering: (1) the statutory potential for cost recovery, (2) the history of enforcement in San Mateo County and other counties, and (3) the number of potential case referrals, a portion of that agency's enforcement expense would be defrayed by penalties and fines collected.



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# Appendix



## APPENDIX

1. Summary of Draft Environmental Impact Report.
2. Summary description of top 15 hazardous waste generating firms in San Mateo County.
3. Survey questionnaire distributed to hazardous waste generators in San Mateo County.
4. ABAG economic growth model used to forecast projected hazardous waste generation.
5. Screening map used for facility suitability determinations.
6. Letter from Dr. David Leu, State Department of Health Services, establishing the soil permeability standard for residual repositories.
7. Household hazardous waste informational brochure developed and distributed by the County Health Department.



# DRAFT EIR SUMMARY

San Mateo County has developed a County Hazardous Waste Management Plan (HWMP) in response to the Tanner Bill (AB 2948). The Tanner Bill was enacted by the State legislature in 1986. The Tanner Bill provides for HWMP's to be prepared by counties subject to approval of the California Department of Health Services (DHS).

The HWMP addresses three general subjects which are important from an environmental perspective: policies, clean-up of contaminated sites, and hazardous waste management facility site designations. The HWMP policies address primarily the reduction and onsite treatment of hazardous waste. The clean-up of contaminated sites is conducted according to DHS and EPA requirements; the HWMP will not significantly affect this process. The facility site designation map indicates general areas potentially suitable for development of hazardous waste management facilities. Site designation for potential hazardous waste management facilities is the most significant aspect of the HWMP in regards to the CEQA process and is the major issue discussed in this Environmental Impact Report.

The main objective of the site designation process is for the County to assume its fair share of responsibility in the management of hazardous waste, as required by the Tanner Bill. Siting criteria for hazardous waste management facilities are required by DHS and have been developed in the San Mateo County HWMP. The criteria are based on DHS Guidelines and include both environmental and land use factors.

Seventy-eight sites were designated as potentially suitable for facilities. Most sites are located on the urban Bayside of the County. The sites are divided into categories according to their potential for facility siting. The portion of the land within the County which did not show potential for facility siting was designated either "Infeasible" or "Prohibited" depending on local site conditions.

## Category 1. High Potential for All Facility Types Including Incinerators

Eight sites are designated in Brisbane, South San Francisco, Redwood City, and Menlo Park. Sites are buffered from residential zoning by at least 2000 feet. Sites are located in undeveloped industrial areas or industrially zoned areas predominately developed with hazardous waste generators.

## Category 2. High Potential for All Facility Types -- No Incinerators

Thirteen sites are designated in Brisbane, South San Francisco, San Bruno, Burlingame, San Carlos, Redwood City, Menlo Park, East Palo Alto and in the County. Sites are buffered from residential zoning by at least 500 feet. Sites are located in undeveloped industrial areas or industrially zoned areas predominately developed with hazardous waste generators

## Category 3. Low Potential for All Facility Types -- No Incinerators

Thirty-one sites are designated in Daly City, Brisbane, South San Francisco, San Bruno, Milbrae, Burlingame, San Mateo, San Carlos, Redwood City, Menlo Park, East Palo Alto and in the County. Sites are not buffered from residential zoning. They are located in industrially

zoned areas which are not predominantly developed with hazardous waste generators.

#### Category 4. Waste Transfer and Storage Facilities Only

Twenty-six sites are designated in Pacifica, South San Francisco, San Bruno, Milbrae, Burlingame, San Mateo, Half Moon Bay, Redwood City, and in the County. Sites are not buffered from residential zoning. Sites are located in commercially zoned areas predominantly developed with hazardous waste generators, industrial areas on the Coastside, and in select County parks and agricultural areas.

#### Category 5. Infeasible for All Facility Types

This category comprises the remainder of County along with the "Prohibited" category.

#### Category 6. All Facilities Prohibited

This category comprises the remainder of County along with the "Infeasible category.

The Tanner Bill requires that the HWMP be approved by the County Board of Supervisors and a majority of the cities representing a majority of the incorporated population in the County and the State Department of Health Services. Upon final approval the County's and each of the Cities' General Plans, and the Hazardous Waste Element of the County Solid Waste Management Plan will be amended as needed to incorporate the HWMP.

Various potential impacts and risks are associated with developing hazardous waste management facilities at the sites. The impacts and hazards include: geotechnical impacts, biological impacts, flooding risks, groundwater contamination impacts, air quality impacts, land use compatibility and public safety risks.

Potential impacts and risks at the sites have been listed in matrix form in Chapter IV. The actual environmental impact of hazardous waste management facilities at any particular site would depend on the nature of the hazardous waste handled, the processing procedure, the design of the facility, and the potential size of accidental release which may occur. A Risk Assessment and CEQA review would be required at the time of permit review.

Two alternatives to the County Preferred Plan were analyzed, the "No Project" alternative and the "State Criteria Only" alternative. The "No Project" alternative would mean the County would not approve a County Hazardous Waste Management Plan or designate potential sites for hazardous waste management facilities. New hazardous waste management facilities would be sited on a site-by-site basis. Formal consideration of local policy would not be required for appeals to the State Appeals Board. Because the policies in the HWMP increase environmental protection, foregoing the opportunity for local planning that the HWMP offers is less environmentally preferable than the proposed project.

The State Criteria Only alternative would base the siting of hazardous waste management facilities only on the criteria contained in State Department of Health Services Guidelines. This alternative would defer consideration of important environmental issues to the local

permit/CEQA process where only one jurisdiction would set standards for environmental protection and mitigation.

The project, or County Preferred Plan, uses both the State criteria and the additional County criteria to designate general areas for hazardous waste management facilities. The County believes that providing more specific siting at the planning stage offers the broadest degree of County-wide public review and is environmentally preferable to the "State Criteria Only" alternative.



# TOP 15 HAZARDOUS WASTE GENERATORS

The following is a brief description of the top fifteen hazardous waste generating firms in San Mateo County (1986), as identified by State Department of Health Services manifest information sources.

## 1. Romic Chemical Corporation, East Palo Alto (10,257.82 tons)

Romic Chemical Corporation, located in East Palo Alto, serves as the County's major chemical recycler for industries and businesses using solvents and other chemicals. Seventy percent of the firm's business involves recycling and resale of the resultant chemicals. Such recyclable substances include alcohols, acetates, non-chlorinated solvents, and fluorocarbons (freons). Romic's operations maximize recycling and thereby minimize the creation of hazardous waste requiring disposal. Waste generation includes the residuals from the recycling or treatment process, as well as the collection of non-recyclables. For wastes which are not recyclable, Romic either processes them for landfill disposal or incineration.

## 2. United Airlines, San Francisco International Airport (4,144.91 tons)

The United Airlines Maintenance Center, located in the San Francisco International Airport, provides mechanical services to commercial aircraft through its machine and plating operations. Over seventy percent of United Airlines' wastes, including waste oils and solvents, are shipped to IT Corporation in Martinez for treatment and disposal. Other wastes are transported to various management facilities in California.

## 3. California Oil Recyclers, San Carlos (2,616.75 tons)

Though a major hazardous waste generator in 1986, California Oil Recyclers has recently relocated to Newark in Alameda County. Before terminating recycling operations in September, 1987, the firm was the County's largest waste generator. California Oil served as both a hauler and reprocessor of used lubricating oil, recycling it into usable petroleum products, fuel oil, and asphalt flux. A large number of gas stations, auto repair shops, car dealers, and machine shops in San Mateo County were serviced by California Oil Recyclers.

## 4. Sandoz Corporation, East Palo Alto (2,532.28 tons)

Sandoz Corporation (formerly Zoecon Corporation), located in East Palo Alto, conducts molecular and chemical research on herbicides and pesticides. The company develops products for large-scale agricultural usage. Ninety-six percent of the firm's wastes are herbicides and pesticides most of which are sent to a hazardous waste management company in Kettleman City (Kings County). Sandoz also recycles used solvents on site and ships wastes to Romic Corporation.

**5. LMC Metals, Redwood City (1,551.44 tons)**

LMC Metals (formerly Levin Metals), located in Redwood City, specializes in scrap metal recycling, which involves shredding wrecked and abandoned vehicles for scrap metal. All oils and engine fluids are drained from the vehicles before LMC accepts them for disposal. LMC provides vehicle disposal and shredding services to all of Northern California. Due to the company's location, however, the majority of business comes from the Bay Area. The source of LMC's waste generation stems not from the shredded vehicles but rather from the maintenance of the heavy and powerful equipment on the site. The firm generates 1,500 tons per year of inorganic solid waste, which is transported to the West Contra Costa Company Landfill in Richmond, California.

**6. Raychem Corporation, Menlo Park (1,199.93 tons)**

Raychem Corporation, located in Menlo Park, produces speciality plastic and metal products for the energy and aerospace industries. The hazardous waste stream resulting from the manufacturing processes is composed of adhesives, paint sludges, and contaminated solvents (normally recoverable). Raychem maintains its own hazardous materials storage yard on-site, which stores waste generated from both its Redwood City and Menlo Park facilities. The average storage period is about four months, after which, wastes are transported to landfills, incinerators, and chemical recyclers in California and throughout the United States.

**7. O'Brien Corporation, South San Francisco (971.46 tons)**

The O'Brien Corporation, located in South San Francisco, is a paint manufacturer, producing approximately six and a half million gallons of paint per year. The majority of wastes generated by O'Brien are paint pigments and resins and waste solvents, which are shipped to Romic Corporation for recycling. Remaining wastes are shipped to facilities in Kettleman City, Gilroy, and Martinez.

**8. Pacific Gas and Electric Company (PG&E) Daly City (880.14 tons)**

The Pacific Gas and Electric facility, located in Daly City, is the operations and service center for San Francisco and a portion of San Mateo County. The majority of the hazardous waste generated are PCB's and Dioxins, which are sent to a facility in Benicia for treatment and disposal. PG & E is fully permitted to store PCB's and contaminated waste oil at this site.

**9. Bayshore Oil Company, Redwood City (821.38 tons)**

Bayshore Oil Company, located in Redwood City, is a hazardous waste route service hauler making regular scheduled pickups of waste oil and transporting it to an oil recycler. In 1986, all of the 1400+ tons of waste oil hauled by this company was shipped to California Oil Recyclers in San Carlos. Currently, all waste oil is transported to Evergreen Oil Inc., in Alameda County.

**10. Stanford Linear Accelerator Center, Menlo Park (799.84 tons)**

The Stanford Linear Accelerator Center (SLAC), located in unincorporated Menlo Park, is a high energy physics research laboratory. The facility is federally funded by the United States Department of Energy and is managed by Stanford University. Seventy-five per cent of the facility's wastes, which include acids, solvents, and other liquid wastes, are transported to Martinez for treatment and disposal. Remaining waste products are managed at various facilities throughout California.

**11. Kelly Moore Paint Company, San Carlos (660.95 tons)**

The Kelly Moore Paint Company, located in San Carlos, is solely a paint manufacturer. Kelly Moore develops some of its own resins and other ingredients for its paints, but also uses such products as colorants from outside sources. About two-thirds of the firm's generated wastes, which includes paint and oily residues, are sent to a chemical waste management facility in Kettleman City. Remaining wastes are recycled at Romic Corporation or disposed of in Martinez.

**12. Trans World Airlines, San Francisco International Airport (302.91 tons)**

Trans World Airlines (TWA), located in the San Francisco International Airport, operates its maintenance center similarly to that of United Airlines (Company 3, above). The center's machine shops handle various aircraft maintenance operations. The largest amount of TWA's waste generated in 1986 was contaminated soil, accounting for 250 of TWA's 302 tons of hazardous waste that year.

**13. Bay Area Oil Recyclers, Pacifica (232.39 tons)**

Bay Area Oil Recyclers, based in Pacifica, is a hazardous waste transporter. The company is a route service hauler, making regular scheduled pickups of waste oil and transporting it to an oil recycler. In 1986 all 794 tons of waste oil hauled by this company was shipped to California Oil Recyclers in San Carlos. Currently, all waste oil is transported to Evergreen Oil Inc. in Alameda County.

**14. Ampex Corporation, Redwood City (231.50 tons)**

Ampex Corporation, located in Redwood City on 55 acres of land, largely supports administrative and engineering (research and development) functions. An international company, Ampex designs and manufactures such products as television broadcast equipment and systems, magnetic tape, computer terminals, instrumentation recorders, and parallel transfer disc drives. While some assembly of instrumentation recorders takes place at Ampex's Redwood City facility, research and development and administrative functions dominate this facility's operations. Approximately one quarter of Ampex's wastes are disposed of at the Ox Mountain Landfill in Half Moon Bay. Remaining wastes, including acids, oily sludges, and liquid wastes are treated and disposed of in Martinez and other California locations.

15. N. L. Chemicals, San Carlos (224.53 tons)

N.L. Chemicals (formerly Spencer Kellogg), located in San Carlos, manufactures paint resins, which are the ingredients for paints and similar products. N. L. serves major manufacturers of paints, printing ink, floor finishers, and other coating industries. The company produces approximately 10,000 tons of resins each year. Ninety percent of the wastes generated in the production process are non-halogenated (non-chlorinated) solvents, almost all of which are recycled at Romic Corporation. The remaining wastes are transported to facilities in Martinez and Santa Barbara County for treatment and disposal.

# SURVEY QUESTIONNAIRE

Department of Environmental Management  
Planning and Development Division



- ☐ **Planning Division** • 415/363-4161  
Mail Drop 5500 • 590 Hamilton Street • Redwood City • California 94063
- ☐ **Building Inspection Section** • 415/363-4601  
Mail Drop 5514 • 590 Hamilton Street • Redwood City • California 94063

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PLANNING DIRECTOR  
CHRISTINE M. GOUIG

## COUNTY OF SAN MATEO

January 22, 1988

### Industrial Facility Managers:

San Mateo County is currently preparing a Countywide Hazardous Waste Management Plan pursuant to AB 2948 (Tanner). The plan, which will serve as the principal planning document for future hazardous waste management decisions, is primarily intended to: (1) analyze the hazardous waste stream within San Mateo County, (2) determine the need for hazardous waste management facilities within the County, (3) identify areas in the County for siting hazardous waste facilities, (4) analyze the potential for source reduction and recycling, and (5) evaluate the opportunities to manage hazardous waste generated by small businesses and households.

When analyzing the hazardous waste stream in San Mateo County, we have been primarily using data obtained from the State Department of Health Services. To augment and expand upon this information source, we have prepared the attached survey questionnaire for distribution to industrial firms generating hazardous waste. The questionnaire focuses on waste generation, on-site treatment and source reduction. Your efforts in completing the survey will significantly help us toward developing a representative plan for San Mateo County. Please use the attached stamped envelope to return the completed questionnaire as soon as possible, or by February 3, 1988.

Thank you for your cooperation. Should you have further questions, please feel free to call me at 363-4161.

Very truly yours,

A handwritten signature in cursive script that reads "George Bergman".

George Bergman  
Senior Planner

GDB:pb - P1P10641A

Attachments

SAN MATEO COUNTY  
HAZARDOUS WASTE MANAGEMENT PLAN

WASTE GENERATION, TREATMENT AND REDUCTION SURVEY

COMPANY: \_\_\_\_\_ CONTACT NAME: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_

1. Which of the following hazardous waste groups does your firm generate? (Please check all that apply.) A table for conversion from hazardous waste category to waste group is attached.

- |   |   |
|---|---|
| <input type="checkbox"/> Waste oil                                  | <input type="checkbox"/> Dye and paint sludges and resins |
| <input type="checkbox"/> Halogenated solvents                       | <input type="checkbox"/> Metal-containing liquids         |
| <input type="checkbox"/> Non-halogenated solvents                   | <input type="checkbox"/> Cyanide and metal liquids        |
| <input type="checkbox"/> Organic liquids                            | <input type="checkbox"/> Non-metallic inorganic liquids   |
| <input type="checkbox"/> Pesticides                                 | <input type="checkbox"/> Metal-containing sludges         |
| <input type="checkbox"/> PCBS and dioxins                           | <input type="checkbox"/> Non-metallic inorganic sludges   |
| <input type="checkbox"/> Oily sludges                               | <input type="checkbox"/> Contaminated soil                |
| <input type="checkbox"/> Halogenated organic sludges and solids     | <input type="checkbox"/> Miscellaneous wastes             |
| <input type="checkbox"/> Non-halogenated organic sludges and solids |   |

2. How much of each waste group did your firm generate in 1986? Please indicate what amount was treated\* or disposed of on-site, and what amount was transported off-site for treatment, storage and/or disposal. A table for conversion from gallons, pounds, or kilograms to tons is attached.

(Waste Group (where relevant))	Total (tons)	Amount Treated*/ Disposed On-Site (tons)	Amount Transported Off-Site (tons)
Waste oil			
Halogenated solvents			
Non-halogenated solvents			
Organic liquids			
Pesticides			
PCBS and dioxins			
Oily sludges			
Halogenated organic sludges and solids			
Non-halogenated organic sludges and solids			
Dye and paint sludges and resins			
Metal-containing Liquids			
Cyanide and metal liquids			
Non-metallic inorganic liquids			
Metal-containing sludges			
Non-metallic inorganic sludges			
Contaminated soil			
Miscellaneous wastes			

\*Does not include "closed loop" or in-process treatment methods which recycle hazardous waste as part of the manufacturing process.

3. Was 1987 waste generation similar to that in 1986? If not, please explain.

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4. For hazardous wastes managed on site, which treatment\* or other management method did you use, and how much treatment capacity is available? Please indicate amount treated, the generalized treatment method, and available capacity, both existing (1986) and projected (2000).

Generalized Treatment Method (where relevant)	Amount Treated*/ Disposed (tons)	Available Capacity 1986 (tons)	Projected Capacity 2000 (tons)
Aqueous treatment - organic _____			
Aqueous treatment - metals/neutralization _____			
Incineration _____			
Solvent recovery _____			
Oil recovery _____			
Other recycling _____			
Stabilization _____			
Waste exchange _____			
Other _____			

\*Does not include "closed loop" or in-process treatment methods which recycle hazardous waste as part of the manufacturing process.

5. Does your on-site operation involve sewage pre-treatment?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, please indicate the amount of pre-treatment sludges generated in 1986 and the amount you expect to generate in the year 2000.

Waste Group (where relevant)	Amount of Pretreatment Sludge - 1986 (tons)	Projected Amount of Pretreatment Sludge - 2000 (tons)
Oily sludges _____		
Halogenated organic sludges and solids _____		
Non-halogenated organic sludges and solids _____		
Dye and paint sludges and resins _____		
Metal-containing sludges _____		
Non-metallic inorganic sludges _____		
Miscellaneous wastes _____		

6. In addition to the on-site processes identified above, does your firm recycle hazardous waste through a "closed loop" or in-process treatment operation?

Yes \_\_\_ No \_\_\_

If yes, please indicate the average monthly waste flow or "through-put" and maximum capacity for your system.

Waste Group (where relevant)	Average Monthly Waste Flow Through System (tons)	Waste Flow Capacity For Your System (tons)
Waste oil _____		
Halogenated solvents _____		
Non-halogenated solvents _____		
Organic liquids _____		
Pesticides _____		
PCBS and dioxins _____		
Oily sludges _____		
Halogenated organic sludges and solids _____		
Non-halogenated organic sludges and solids _____		
Dye and paint sludges and resins _____		
Metal-containing liquids _____		
Cyanide and metal liquids _____		
Non-metallic inorganic liquids _____		
Metal-containing sludges _____		
Non-metallic inorganic sludges _____		
Contaminated soil _____		
Miscellaneous wastes _____		

7. What are your top six waste-generating processes (e.g., degreasing, plating, paint stripping, etc.) and what type of waste is generated from each? Please use the waste groups listed in No. 1 above.

Process 1: \_\_\_\_\_

Type of waste(s) generated: \_\_\_\_\_

Process 2: \_\_\_\_\_

Type of waste(s) generated: \_\_\_\_\_

Process 3: \_\_\_\_\_

Type of waste(s) generated: \_\_\_\_\_

Process 4: \_\_\_\_\_

Type of waste(s) generated:

Process 5: \_\_\_\_\_

Type of waste(s) generated:

Process 6: \_\_\_\_\_

Type of waste(s) generated:

8. Have you instituted any of the following measures to reduce your waste generation at the source?\* Please indicate which technique(s) you have undertaken.

<input type="checkbox"/> Improved pre-treatment	<input type="checkbox"/> Reuse in operation
<input type="checkbox"/> In-process recycling	<input type="checkbox"/> Did internal waste audit
<input type="checkbox"/> Process changes	<input type="checkbox"/> Hired consultant
<input type="checkbox"/> Chemical substitution to reduce toxicity	<input type="checkbox"/> Assistance from Department of Health Services on waste minimization
<input type="checkbox"/> Product reformulation	<input type="checkbox"/> Nothing yet
<input type="checkbox"/> "Housekeeping" or procedural	<input type="checkbox"/> Other

\*Please note that neutralization and sewer discharge is not source reduction.

9. Approximately how successful have you been in waste reduction? Please indicate the percentage reduction in the amount of wastes requiring off-site management.

Waste Group (where relevant)	Percent Reduction (circle one)										
Waste oil _____	0	10	20	30	40	50	60	70	80	90	100%
Halogenated solvents _____	0	10	20	30	40	50	60	70	80	90	100%
Non-halogenated solvents _____	0	10	20	30	40	50	60	70	80	90	100%
Organic liquids _____	0	10	20	30	40	50	60	70	80	90	100%
Pesticides _____	0	10	20	30	40	50	60	70	80	90	100%
PCBS and dioxins _____	0	10	20	30	40	50	60	70	80	90	100%
Oily sludges _____	0	10	20	30	40	50	60	70	80	90	100%
Halogenated organic sludges and solids _____	0	10	20	30	40	50	60	70	80	90	100%
Non-halogenated organic sludges and solids _____	0	10	20	30	40	50	60	70	80	90	100%
Dye and paint sludges and resins _____	0	10	20	30	40	50	60	70	80	90	100%
Metal-containing liquids _____	0	10	20	30	40	50	60	70	80	90	100%
Cyanide and metal liquids _____	0	10	20	30	40	50	60	70	80	90	100%
Non-metallic inorganic liquids _____	0	10	20	30	40	50	60	70	80	90	100%
Metal-containing sludges _____	0	10	20	30	40	50	60	70	80	90	100%
Non-metallic inorganic sludges _____	0	10	20	30	40	50	60	70	80	90	100%
Contaminated soil _____	0	10	20	30	40	50	60	70	80	90	100%
Miscellaneous wastes _____	0	10	20	30	40	50	60	70	80	90	100%

10. What is the potential for waste reduction? For each waste group you generate, please indicate the potential reduction possible.

Waste Group (where relevant)	Potential for Waste Reduction			METHOD
	No	Yes	%	
Waste oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Halogenated solvents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Non-halogenated solvents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Organic liquids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pesticides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PCBS and dioxins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Oily sludges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Halogenated organic sludges and solids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Non-halogenated organic sludges and solids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dye and paint sludges and resins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Metal-containing liquids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Non-metallic inorganic sludges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Contaminated soil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Miscellaneous wastes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

11. Please describe barriers you perceive to implementing any of the above methods.

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12. Please indicate which of the following types of assistance or incentives from local government could help to increase your company's ability to accomplish further source reduction and waste minimization.

☐ Financial assistance (e.g., loans)

☐ Permitting assistance

☐ Support for legislation which can eliminate disincentives to waste reduction

☐ Workshops regarding waste minimization techniques for your industry

☐ Other \_\_\_\_\_

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13. Please tell us briefly about any trends or changes in your industry that may substantially alter the amount or type of hazardous waste your company will generate between now and the Year 2000.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Thank you for your cooperation.

GDB:pb - FRM10641

TABLE A-3

CONVERSION OF CALIFORNIA WASTE CATEGORIES TO WASTE GROUPS

<u>CALIFORNIA WASTE CATEGORY</u>	<u>WASTE GROUP</u>
111 ACIDS WITH METALS	METAL-CONTAINING LIQUIDS
112 ACID WITHOUT METALS	NON-METALLIC INORGANIC LIQUIDS
113 UNSPECIFIED ACID	NON-METALLIC INORGANIC LIQUIDS
121 ALKALINE WITH METALS	METAL-CONTAINING LIQUIDS
122 ALKALINE WITHOUT METALS	NON-METALLIC INORGANIC LIQUIDS
123 UNSPECIFIED ALKALINE	NON-METALLIC INORGANIC LIQUIDS
131 AQUEOUS WITH REACTIVE ANIONS	NON-METALLIC INORGANIC LIQUIDS
132 AQUEOUS WITH METALS	METAL-CONTAINING LIQUIDS
133 AQUEOUS WITH TOTAL ORGANICS >10%	ORGANIC LIQUIDS
134 AQUEOUS WITH TOTAL ORGANICS <10 %	ORGANIC LIQUIDS
135 UNSPECIFIED AQUEOUS SOLUTION	NON-METALLIC INORGANIC LIQUIDS
141 OFF-SPEC, AGED OR SURPLUS inorganics	MISCELLANEOUS WASTES <del>INORGANICS</del>
151 ASBESTOS-CONTAINING WASTE	MISCELLANEOUS WASTES
161 FLUID CATALYTIC CRACKER WASTE	MISCELLANEOUS WASTES
162 OTHER SPENT CATALYST	MISCELLANEOUS WASTES
171 METAL SLUDGE	METAL-CONTAINING SLUDGES
172 METAL DUST	MISCELLANEOUS WASTES
181 → 161 OTHER INORGANIC SOLID WASTE	MISCELLANEOUS WASTES
211 HALOGENATED SOLVENTS	HALOGENATED SOLVENTS
212 OXYGENATED SOLVENTS	NON-HALOGENATED SOLVENTS
213 HYDROCARBON SOLVENTS	NON-HALOGENATED SOLVENTS
214 UNSPECIFIED SOLVENT MIXTURES	NON-HALOGENATED SOLVENTS
221 WASTE OIL AND MIXED OIL	WASTE OIL
222 OIL/WATER SEPARATION SLUDGE	OILY SLUDGES
223 UNSPECIFIED OIL CONTAINING WASTE	WASTE OIL
231 PESTICIDE RINSE WATER	PESTICIDES
232 PESTICIDES AND PESTICIDE PRODUCTION WASTE	PESTICIDES
241 TANK BOTTOM WASTE	NON-HALOGENATED ORGANIC SLUDGES & SOLIDS
251 STILL BOTTOMS WITH HALOGENATED ORGANICS	HALOGENATED ORGANIC SLUDGES & SOLIDS
252 OTHER STILL BOTTOM WASTE	NON-HALOGENATED ORGANIC SLUDGES & SOLIDS
261 POLYCHLORINATED BIPHENYLS	PCBs & DIOXINS

CALIFORNIA WASTE CATEGORYWASTE GROUP

271 ORGANIC MONOMER WASTE	DYE & PAINT SLUDGES & RESINS
272 POLYMERIC RESIN WASTE	DYE & PAINT SLUDGES & RESINS
281 ADHESIVES	DYE & PAINT SLUDGES & RESINS
291 LATEX WASTE	DYE & PAINT SLUDGES & RESINS
311 PHARMACEUTICAL WASTE	MISCELLANEOUS WASTES
321 SEWAGE SLUDGE	NON-HALOGENATED ORGANIC SLUDGES & SOLIDS
322 BIOLOGICAL WASTE OTHER THAN SEWAGE SLUDGE	MISCELLANEOUS WASTES
331 OFF-SPEC, AGED OR SURPLUS ORGANICS	MISCELLANEOUS WASTES
341 ORGANIC (NONSOLVENTS) LIQUIDS WITH HALOGENS	ORGANIC LIQUIDS
342 ORGANIC LIQUIDS WITH METALS	ORGANIC LIQUIDS
343 UNSPECIFIED ORGANIC LIQUID MIXTURES	ORGANIC LIQUIDS
351 ORGANIC SOLIDS WITH HALOGENS	HALOGENATED ORGANIC SLUDGES & SOLIDS
352 OTHER ORGANIC SOLIDS	OILY SLUDGES
411 ALUM AND GYPSUM SLUDGE	NON-METALLIC INORGANIC SLUDGES
421 LIME SLUDGE	NON-METALLIC INORGANIC SLUDGES
431 PHOSPHATE SLUDGE	NON-METALLIC INORGANIC SLUDGES
441 SULFUR SLUDGE	NON-METALLIC INORGANIC SLUDGES
451 DEGREASING SLUDGE	HALOGENATED ORGANIC SLUDGES & SOLIDS
461 PAINT SLUDGE	DYE & PAINT SLUDGES & RESINS
471 PAPER SLUDGE/PULP	NON-HALOGENATED ORGANIC SLUDGES & SOLIDS
481 TETRAETHYL LEAD SLUDGE	OILY SLUDGES
491 UNSPECIFIED SLUDGE WASTE	NON-HALOGENATED ORGANIC SLUDGES & SOLIDS
511 EMPTY PESTICIDE CONTAINERS > 30 GAL	MISCELLANEOUS WASTES
512 OTHER EMPTY CONTAINERS > 30 GAL	MISCELLANEOUS WASTES
513 EMPTY CONTAINERS < 30 GAL	MISCELLANEOUS WASTES
521 DRILLING MUD	NON-METALLIC INORGANIC SLUDGES
531 CHEMICAL TOILET WASTE	MISCELLANEOUS WASTES
541 PHOTOCHEMICALS/PHOTOPROCESSING WASTE	MISCELLANEOUS WASTES

551 LABORATORY WASTE CHEMICALS  
CALIFORNIA WASTE CATEGORY

561 DETERGENT AND SOAP  
571 FLY ASH, BOTTOM ASH AND RETORT  
    ASH  
581 GAS SCRUBBER WASTE  
591 BAGHOUSE WASTE  
611 CONTAMINATED SOIL  
612 HOUSEHOLD WASTES  
  
711 LIQUIDS WITH CYANIDES > 1000  
    MG/L  
721 LIQUIDS WITH ARSENIC > 500 MG/L  
722 LIQUIDS WITH CADMIUM > 100MG/L  
723 LIQUIDS WITH CHROMIUM > 500  
    MG/L  
724 LIQUIDS WITH LEAD > 500 MG/L  
725 LIQUIDS WITH MERCURY > 20 MG/L  
726 LIQUIDS WITH NICKEL > 134 MG/L  
727 LIQUIDS WITH SELENIUM > 100  
    MG/L  
728 LIQUIDS WITH THALLIUM > 130  
    MG/L  
731 LIQUIDS WITH PCBs > 50 MG/L  
741 LIQUIDS WITH HALOGEN. ORG.  
    COMP. > 1000 MG/L  
751 SOLIDS WITH HALOGEN. ORG.  
    COMP. > 1000 MG/KG  
791 LIQUIDS WITH Ph < 2  
  
801 WASTE POTENTIALLY CONTAINING  
    DIOXINS

MISCELLANEOUS WASTES  
WASTE GROUP

MISCELLANEOUS WASTES  
NON-HALOGENATED ORGANIC  
    SLUDGES & SOLIDS  
MISCELLANEOUS WASTES  
MISCELLANEOUS WASTES  
CONTAMINATED SOIL  
MISCELLANEOUS WASTES  
  
CYANIDE & METAL LIQUIDS  
  
METAL-CONTAINING LIQUIDS  
METAL-CONTAINING LIQUIDS  
METAL-CONTAINING LIQUIDS  
  
METAL-CONTAINING LIQUIDS  
METAL-CONTAINING LIQUIDS  
METAL-CONTAINING LIQUIDS  
METAL-CONTAINING LIQUIDS  
  
METAL-CONTAINING LIQUIDS  
  
PCBs & DIOXINS  
HALOGENATED SOLVENTS  
  
HALOGENATED ORGANIC  
    SLUDGES & SOLIDS  
NON-METALLIC INORGANIC  
    LIQUIDS  
PCBs & DIOXINS

TABLE A-4

COEFFICIENTS TO CONVERT OTHER UNITS TO TONS<sup>1</sup>

To Convert To Tons	Multiply By
Gallons	0.0042
Pounds	0.0005
Yards	0.8428
Liters	0.0011
Kilograms	0.0011
Metric Tons	1.102
Cubic Meters	1.102
55 Gallon Barrel	0.231
42 Gallon Barrel	0.176

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<sup>1</sup>These conversion factors are used in the HWIS operated by the Department and are based upon the density of water.



# ABAG FORECASTING MODEL



MetroCenter  
Eighth & Oak Streets  
Oakland

Mailing Address:  
P.O. Box 2050  
Oakland, CA 94604

(415) 464-7900

October 19, 1987

To: Hazardous Waste Task Force

Fr: Raymond J. Brady

Re: Baseline 1986 Estimates and Year 2000 Forecast

Attached are the 1986 baseline hazardous waste estimates and forecast year 2000 estimates for each county and the region.

The 1986 estimates are based on the Hazardous Waste Information System (HWIS) data provided by the California Department of Health Services (DHS). Although ABAG staff have identified and corrected some data base errors, it is staff's opinion that errors probably remain in the data. Therefore, ABAG staff recommends a random review of the 1986 hazardous waste estimates by the county planning staff's to assure data comparability.

The baseline 2000 forecast represents the "no technology change" scenario. The technical advisory committee agreed that the baseline forecast will be used as a starting point to evaluate potential future waste reductions by industry.

ABAG staff recommends the following process for evaluating and identifying potential waste generation reduction by industry.

1. Identify the top five or ten waste generating industries in your county. Next, focus the review process on the major waste categories within each industry. Use your own judgement in defining major, but clearly any category representing at least 20% of the total waste generated by an industry clearly is major.
2. To assure comparability of information ("We're all speaking the same language."), staff recommends that questions presented to industry representatives take the following form:
  - a) " What, in professional opinion, will be the waste reductions by type of waste per unit of output over the forecast period? In short, is new technology or recycling going to influence the level of waste output?"
  - b) " If so, what percentage reductions will occur per unit of output in the sector and by waste type? For example, let's look at SIC 28 (Chemicals and Allied Products). Within this industry, it appears that non-halogenated solvents are a major waste and in particular, unspecified solvent mixtures (California Waste Category 214)." Note: Classifications are found in Technical # 4, published in September.

The question you want answered is: " Given process technology change in the industry, what will be the waste reduction per unit of output of this waste type (expressed as a percentage)?"

Let's assume the professional consensus is that reductions for the waste type identified above will be 25% over the next 13 years. The 25% reflects not a total reduction in the waste type, only a relative reduction of the waste type. Therefore, if industry output increased by 100% between 1986 and 2000, the waste generated would increase 75%. This information on reductions will be gathered by ABAG and used to adjust the base case scenario for each county. As a rule of thumb, any reduction levels greater than 25% should be accompanied by the technical argument for the reduction. It is staff opinion that any reductions greater than 40% will require a major change in control and process technology of an industry.

After this information has been gathered by county staffs, the hazardous waste planning group at ABAG will incorporate these modifications in a "technology change scenario" by county.

It is also clear that certain county's will have greater industry expertise than others. Information gathered in one county, such as in the case of the petrochemical industry in Contra Costa and the high tech industry in Santa Clara, will be used as a benchmark for reductions of waste per unit of output in county's that have similar industries. We are assuming (in short) that technology applied in one county will have regionwide impacts.

Finally, the information presented here represents waste generated as a result of the production process. It does not cover such subjects as reclassification of a waste product from non-hazardous to the hazardous category. Also the 1986 waste data contains "clean-up" categories (such as soils) that are not projected in the year 2000 scenario.

52-10-100-100  
100-100-100  
100-100-100

FEB 2 1988



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## TECHNICAL MEMORANDUM No.2

### A Model to Forecast Hazardous Waste Levels In Bay Area Industries

Raymond J. Brady

#### Overview

The objective of this technical memorandum is to provide a reasonable methodology to forecast increased output of hazardous materials associated with economic activity in the Bay Area. The discussion will focus on the following:

- a) estimating economic activity;
- b) developing technological relationships between hazardous waste generation and industry output;
- c) explicit assumptions and deficiencies, and
- d) a worked example.

It is important to state from the outset that in forecasting there is no fool proof methodology. There are, however, some general rules that are followed. First, the methodology should be defensible and objective. That is, a model structure should follow a logical course relating activity and results in a way that experts can generally agree that the structure reflects a reality as close to the real world as possible. Second, assumptions should be plausible. Assumptions serve as the basis for a model structure. In hazardous waste generation, assumptions about the level of economic activity, and technological substitution in the production process which affects waste generation are made. These assumptions should reflect a reasonable relationship between process technology, output and the level of waste being generated. Finally, a good model should be transparent. Since we are dealing with much uncertainty, a technical consensus on a logical model framework and assumptions are essential. Transparency requires that model structure have a framework which can be understood and criticized for the purpose of developing an overall consensus of the reasonableness of the model results.

#### The Problem

The problem is to develop a model to forecast hazardous waste generation by seventeen categories. ABAG proposes to use this model to forecast hazardous waste in the nine counties that comprise the Bay Area. The target year for the forecast is 2000. The base year is 1985. Forecasts of hazardous waste will be by two-digit Standard Industrial Classification (SIC) and by county in the Bay Area. SIC codes were established by the Office of Budget and Management in Washington for the purpose of classifying the outputs of specific firms into an economic framework.

That is, a single firm may produce more than one output. Each output is classified by economic activity, as part of the SIC accounting system. In the Bay Area, output data by county and SIC level has been developed for the purpose of forecasting the growth in hazardous waste.

The results of this model will be to provide planning information on the physical level of hazardous waste that might be generated by industry in each of the nine-county's in the Bay Region for the year 2000.

The data will reflect baseline information. Perturbations on the baseline data could be developed to provide a range estimate, based upon certain technology assumptions about waste generation and efficiency in production. These assumption would be developed in cooperation with the Task Force.

### Estimating Economic Activity

Output by industry in the Bay Area reflects economic assumptions in the latest ABAG projections series, Projections 87. Projections 87 data are county specific, and economic information is by thirty-two industry sectors. Output is expressed in constant 1982 dollars. Since we are forecasting a physical unit (some form of waste), how can dollar values be used to forecast a physical unit? By use of real value growth estimates (constant dollar value sum), inflation is removed from the forecast. There is a one-to-one correspondence in real dollar output and output in physical units. Real dollar output directly reflects increased market share, efficiencies in production and overall growth in demand for the physical unit. In practical terms, it represents the dollar equivalent of a unit change in the physical output. Real dollar output does not change unless the physical level of output changes.

Therefore, real growth in the value of output can be used as a surrogate for physical output change. Real dollar value growth also considers changes in productivity. Why are productivity changes important? One common question that is asked is: "why not simply use employment growth to measure growth in hazardous waste generation?" Let's look at an example to explain why employment growth would not correlate well with hazardous waste growth. In Projections 87, regional electronics employment grows at a slower rate than in the most recent historical past in the Bay Area. The reason for this derives from the assumption that market conditions that will force this industry to become increasingly more capital (technology) intensive in the future. Therefore, between 1985 and 2000, ABAG forecasts a 23% increase in employment in this industry. If we assumed a linear relationship between employment growth and hazardous waste generation, we would assume that this waste would increase by 23%. What is wrong? First, the employment growth does not correlate well with growth in physical output because it does not consider technological change that might increase efficiency in the physical production process. This is a major deficiency of the employment method. At the same time that employment increased in electronics by 23% over the period 1985-2000, electronics dollar output rose by 61%. Why the difference? Output reflects efficiency and technology substitution which tends to reduce the demand for labor. Therefore, the unit output, reflected in constant 1982 dollars, rises per worker over this period.

## Developing Output Forecasts by Sector

Industry output data is derived from the a regional input-output model for the nine-county Bay Area (see Brady and Yang). An input-output model is a structure of an economy which identifies the flow of purchases and sales between industries in that economy. The advantage of using a input-output model is that it can provide the direct and indirect impacts in changes in demand by one sector on all sectors.

The dollar outputs that will be used to estimate future waste generation by county reflect this effect.

A deficiency in using the existing input-output structure of the Bay Area is that it assumes that long-term trading patterns will not change substantially. Although in service sectors this assumption probably holds well, in manufacturing sectors this assumption is quite weak. For example, the amount of electronics going into autos is increasing with time.

A fixed technical trading structure which reflect a pattern at a moment in time would not pick up this change, and therefore would underestimate the potential growth over time in the demand for electronics by the auto industry. It is a problem (unfortunately) that cannot be avoided.

Therefore, the outputs prepared for the Hazardous Waste Management Plans for each county reflects the assumptions and industry trading patterns as found in Projections 87. There are deficiencies found in using this method. But it is far superior to the use of employment change as a measure of waste generation, and it is consistent with the latest regional and county economic growth forecasts.

## Developing Technological Relationships between Waste Generation and Industry Output and by County

The use of input-output analysis to forecast energy demand, pollution output and waste generation is not new (see Joun; Kohn, Leontief and Miernyk). Information provided by the Department of Health Services on Hazardous Waste Generation is being coded to reflect the SIC structure of the existing industries in the Bay Area by county. Once the data is coded and sorted by SIC structure, output data by county for 1985 will be divided into each pollutant type to develop a technical coefficient. The technical coefficient reflects the amount of waste generated per \$1 of output. Mathematically, this is expressed as:

Let,

$H_{iw}$  - the amount of hazardous waste by type generated by industry (i) in the base year.

$X_{ij}$  - the level of output for industry (i) in the base year.

$HT_i$  - the hazardous waste technical coefficient by each type for industry i.

Now,

$$HT_i = H_{iw} / X_{ij}.$$

The above reflects a simple ratio of output to waste. It assumes a fixed technical relationship between waste generation and output level. That is, it assumes that new technology will not increase efficiency in terms of internalization of waste into the production process. In many cases, this may be a clear oversimplification of reality.

However, as a base case, it will be useful in assessing the trend growth in waste generation as a function of the output of industries in each county. Professional judgement becomes critical at this stage to provide information on process changes that might affect the level of waste generation in the future.

An advantage of not using an average waste generation coefficient for the region and applying it to counties is that economic activity in selected industries of the same type may vary from county to county. For example, San Francisco has a reasonably large number of workers who work in the SIC industry structure of petroleum refining. Clearly, San Francisco does not have any refineries. By using the data from the Department of Health Services which is county specific, we are able to construct waste generation technical coefficients that reflect the unique economic structure of the industry in each county.

Once the initial condition has been defined, the technical coefficient is multiplied by the forecast year estimate to determine the level of waste by type that would be generated for the base case.

Issues such as changing mix of waste within an industry and overall process level efficiencies should be addressed by the Task Force.

#### Explicit Assumptions and Deficiencies of Forecasting Method

The assumptions are:

- A. economic growth in the Bay Area counties will follow the assumptions of Projections 87;
- B. the industry trading patterns found in the base year of the input-output model (1982) will not change over the forecast period;
- C. the technical relationship between waste generation by type and the dollar output of the selected industries will not change over the forecast period. We assume no efficiencies for the base case. The technical relationship is linear.

The deficiencies are:

- A. Fixed technical relationships in the trading patterns of industries over the forecast period;
- B. No increased efficiencies which could either internalize waste generation in the production process or reduce its production over time, due to more efficient process technology.

### Worked Example

A hypothetical worked example of a baseline forecast of hazardous waste generation is presented. The industry for which an example will be constructed will be retail trade (SIC 59). We will call the county, County XYZ.

The Toxic Control Division of the Department of Health Services has collected information from various firms in this SIC category. Staff has aggregated the data of the waste discharge from each firm and has aggregated it into Retail Trade for County XYZ. ABAG has the dollar output levels of this industry in County XYZ for 1985 and 2000.

The waste data are:	Acid Solution (PH<=2) with metals	20 tons
	Halogenated Solvents	5 tons
	Oxygenated Solvents	5 tons
	Hydrocarbon Solvents	15 tons
	Waste Oil	30 tons
	Organic Solids	50 tons
	Total	125 tons

The constant dollar output for the base year for County XYZ was estimated at \$250,000,000. ABAG estimates that real growth in output will increase to \$350,000,000 by the year 2000.

First we divide \$250,000,000 into each waste to derive the initial condition between waste and output. Next, the technical coefficient for each solid waste category is multiplier by the target year output to attain the estimated increase in solid waste from the economic activity of the specified industry. Table 1 illustrates this process.

Table 1

Waste Generation by Type and Industry 1985 and 2000

Waste Type	Waste (1985) (A)	Waste Coefficient (B)	Waste (2000) (C)
Acid Solution	20 tons	.00000008	28 tons
Halogenerated Solvents	5 tons	.00000002	7 tons
Oxygenerated Solvents	5 tons	.00000002	7 tons
Hydrocarbon Solvents	15 tons	.00000006	21 tons
Waste Oil	30 tons	.00000012	42 tons
Organic Solids	50 tons	.00000020	70 tons
Total	125 tons	.00000050	175 tons

(a1) Output 1985 \$250,000,000

(b2) Output 2000 \$350,000,000

Note: To find (B), divide (a1) by the column vector (A). That is,  $(A/a1)$ .

To find (C), multiple (b2) by the column vector (B). That is,  $(b2 * B)$

Therefore, the waste generation by category and industry is expected to increase by 40% over the period 1985-2000 given the assumptions outlined in this paper.

## References

1. Brady, Raymond and Chin Ming Yang, "1982 Input-Output Model and Economic Multipliers For the San Francisco Bay Region," Association of Bay Area Governments, Oakland, CA (June 1986)
2. Joun, R.Y.P. and R.S. Conway, Jr. "Regional Economic-Demographic Forecasting Models: A Case Study of Washington and Hawaii Models," *Socio-Economic Planning Sciences*, 17 (1983) pp. 345-353.
3. Kohn, R. "Input-Output Analysis and Air Pollution Control," in E.S. Mills (ed.), *Economic Analysis of Environmental Problems*. New York, 1975.
4. Miernyk, W.H. and J.T. Sears. *Air Pollution Abatement and Regional Economic Development*. Lexington, Mass.: Lexington Books, 1974.





Insert Screening Map for North  
County.



## DEPARTMENT OF HEALTH SERVICES

14744 P STREET  
SACRAMENTO, CA 95814

(916) 324-1807



RECEIVED  
December 9, 1987  
ELECTRICITY

Mr. David B. Okita  
Senior Civil Engineer  
Contra Costa County  
Community Development Department  
North Wing, 4th Floor  
651 Pine Street  
Martinez, CA 94553

Dear Mr. Okita:

This is in response to your request of October 21, 1987 for clarification of two of the siting criteria in the Departments June 30, 1987 guidelines for preparation of Hazardous Waste Management Plans you asked, "how is critical habitat area defined?" and "is the requirement for permeable strata and soils for hazardous waste management repositories attainable?"

The Guidelines (pages 3-14) read: "Habitat of Endangered Species no facilities should be located within critical habitat areas, as defined in local general, regional or state plans". For the purposes of the county hazardous waste management plan, a critical habitat area is an area, the development of which would result in an immediate, direct and unmitigated decrease in the number or viability of an endangered species population.

Since your county's general plan apparently has no lands so designated, you will need to refer to regional or state plans. The California Department of Fish and Game has statewide responsibilities for endangered species (this includes both plants and animals). Their staff is your best resource: They have published Guidelines for consulting with the Department of Fish and Game on Projects Subject to CEQA That May Affect Endangered and Threatened Species (Environmental Services Division Administrative Report 86-1, Feb. 1986).

That Department also has a publication At The Crossroads which shows the ranges (not critical habitats) of endangered animal species. They also maintain the natural diversity data base which has information on the occurrence of endangered species of plants and animals. There is an important distinction between range and critical habitat. Some species, the Bald Eagle or Perigrin Falcon, as examples, have very large ranges--essentially the entire state, but very limited critical habitat areas, basically the immediate vicinity of nests.

Mr. David B. Okita  
Page 2

Your plan should include as a siting criterion for residuals repositories that they meet the requirements of the State Water Resources Control Board for Class I Waste Management Units. State Water Resources Control Board's regulations (CAC, Title 23, Section 2531). Thus criteria in your plan should not allow new residuals repositories in areas lacking a natural underlying stratum with permeability under  $1 \times 10^{-7}$  CM/sec.

I hope that this is of some assistance to you. I have also attached a recent department publication on Environmental Review for Hazardous Waste Management Plans. If you have any questions, please call Mike Kiado or Robin Reynolds at (916) 324-1807.

Sincerely,



David J. Leu, Ph.D., Chief  
Alternative Technology Section  
Toxic Substances Control Division

Enclosure

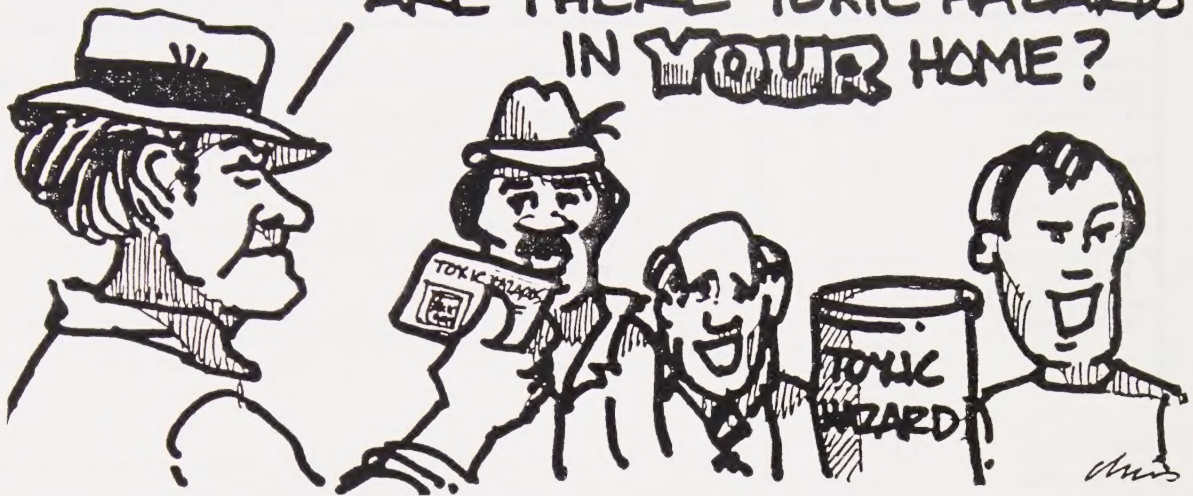
DJL:RR:pl

SAN MATEO COUNTY  
PLANNING DIVISION  
RECEIVED

JAN 6 1988

# HOUSEHOLD HAZARDOUS WASTE BROCHURE

## ARE THERE TOXIC HAZARDS IN YOUR HOME?



### TOXIC PRODUCTS IN YOUR HOME BECOME TOXIC WASTE

Many products used daily in the home such as household cleaners, paints and varnishes, insecticides, thinners and solvents, drain openers, toilet bowl cleaners, oven cleaners, furniture and silver polish, used motor oil, antifreeze, etc., are toxic and can be a hazard to our health and our environment. These products can poison you, cause respiratory problems, skin irritations, etc. When these products are thrown into the trash, the chemicals can seep into the soil and into groundwater. When put into storm drains, they end up polluting our bay and ocean. While most packages offer adequate instructions on the storage and use of these potentially dangerous materials, they rarely contain instructions on how to dispose of them.

### SOME THINGS TO REMEMBER WHEN PURCHASING AND USING TOXIC PRODUCTS

- Look for key words such as poison, corrosive, caustic, volatile, flammable, explosive on the label.
- Check labels and use only products which provide clear instructions for their use.
- Use products which are in "child-proof" packages.
- Usually one household cleaning product can serve many purposes. You may not need a different cleaning product for separate household cleaning purposes.
- Follow directions and remember that twice as much does not mean twice as good. Use care, wear gloves, and use in well-ventilated areas.
- Never mix different products! Poisonous or hazardous reactions may occur or cause an explosion.
- Buy only the quantity you will use.



### IN THE EVENT OF SPILLAGE OF TOXIC MATERIALS

- Sweep or shovel dust and powders into a plastic bag.
- Spread sand, sawdust or cat litter on liquids to contain the spillage, and then shovel into plastic bag.
- When hosing down an area, be careful to avoid contamination of streams, ponds, etc.

### REMEMBER !!! UNUSED TOXIC MATERIALS

MUST NOT BE THROWN IN GARBAGE CANS  
MUST NOT BE FLUSHED INTO DRAINS OR TOILETS  
MUST NOT BE BURNED

KEEP THE NUMBER OF THE SAN FRANCISCO POISON CONTROL CENTER HANDY IN CASE OF EMERGENCIES:  
(415) 666-2845

FOR MORE INFORMATION ON THE SAFE DISPOSAL OF TOXIC WASTES, CALL THE DEPARTMENT OF HEALTH SERVICES, ENVIRONMENTAL HEALTH SECTION IN REDWOOD CITY, 363-4305.

# HOUSEHOLD HAZARD ALERT

Save this in a convenient location for future Reference

PRODUCT	TOXIC EFFECTS	DISPOSAL	ALTERNATIVE TO PRODUCT
<b>HOUSEHOLD CLEANERS</b>			
Drain Openers	CORROSIVE	If you cannot completely use all the materials or donate them to a friend or institution, or recycle them, disposal must be at a hazardous waste facility. For more information on recycling, call Environmental Health, 363-4305.	Pour boiling water down your drain a couple of times a week as a preventive. Unclog drains with a metal snake or plunger.
Oven Cleaners	CORROSIVE		Keep your oven clean as you use it. Ovens can be cleaned with diluted ammonia or baking soda.
Toilet Bowl Cleaners	CORROSIVE		A general household cleaner or baking soda can be used. Clean toilets often and you won't need strong chemicals.
Floor and Furniture Polishes	FLAMMABLE		Light, soapy water to clean and a soft cloth to shine.
Ammonia and Ammonia-based Cleaners	CORROSIVE (Never mix ammonia and chlorine-based products--they produce a deadly gas)		Vinegar with salt and water is a good general surface cleaner. Dissolved baking soda does well in the bathroom and for cleaning coffee pots, chrome, copper and tile. Well diluted ammonia is a good general household cleaner.
Glass Cleaners	IRRITANT		Warm water and vinegar in an 8-to-1 solution makes a good window cleaner.
Chlorine Bleach	CORROSIVE		Never mix with ammonia products--deadly chlorine gas results. Baking soda and water is a safer cleaner than diluted bleach.
Spot Removers/Dry Cleaning Fluids	FLAMMABLE		Don't use unless absolutely necessary. Or use professional dry cleaners for those stubborn stains.
Disinfectants	FLAMMABLE		Dilute bleach (1/4 cup to 1 quart water) makes a good all-purpose cleaner and disinfectant.
Rug and Upholstery Cleaners	FLAMMABLE and/or CORROSIVE		Dry cornstarch sprinkled on rug and vacuumed up is sometimes effective. Or use soap-based, non-aerosol rug shampoos. Always wear gloves and use ventilation.
Air Fresheners	IRRITANTS and/or FLAMMABLES	Open windows and air out home often. An open box of baking soda in the refrigerator is an effective deodorizer.	
Aerosols	FLAMMABLE	Use non-aerosol products when possible.	
<b>AUTOMOTIVE PRODUCTS</b>			
Waste Oil	FLAMMABLE	None.	
Antifreeze	POISON	None.	
Brake and Transmission Fluids	FLAMMABLE	None.	
Gasoline	FLAMMABLE POISON	None.	
Diesel Fuel	FLAMMABLE	None.	
Car Batteries	CORROSIVE	None.	
<b>PAINT PRODUCTS</b>			
Paints, Enamel or Oil Based	FLAMMABLE	Use latex or water-based paints if possible. Unusable paints should go to HAZARDOUS WASTE FACILITY.	
Paints, Latex or Water-based	FLAMMABLE	None.	
Paint Solvents and Thinners	FLAMMABLE	Latex and water-based paints don't require thinners.	
<b>PESTICIDES--HERBICIDES</b>			
(Including Flea Powders, Garden Insecticides, Ant and Roach Killers, Weedkillers, etc.)	POISON. SOME are FLAMMABLE	Organic gardening techniques, pulling weeds instead of using herbicides, herbal baths for pets, good housekeeping practices. Call an organic gardening club, or UC Extension Service.	
<b>MISCELLANEOUS PRODUCTS</b>			
Pool Acids	CORROSIVE	None.	
Photographic Chemicals	CORROSIVE POISON	None.	
<b>KEY TO TOXIC EFFECTS</b>			
POISON - Acutely toxic. Poison can cause severe illness or death if ingested. Many can be absorbed directly through the skin or respiratory system.		respiratory irritants. Can be fatal if ingested. Many are volatile, emit toxic vapors, and should only be used with adequate ventilation. These products should never be stored near an ignition source or with corrosive products.	
FLAMMABLES - Many flammable products contain petroleum distillate or other solvents which are skin, eye and		CORROSIVE - Any extremely acid or alkaline product is corrosive. They can cause severe burns on contact, vapors can burn eyes and mucous membranes, and they are very poisonous if ingested.	
		IRRITANTS - Irritants are mildly corrosive or volatile substances which can irritate skin, eyes and mucous membranes.	

Information taken from the publication: "The World Is Full of Toxic Waste". Reprinted in part by permission of the San Diego County Environmental Health Coalition.

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